Antiquity

A Quarterly Review of Archaeology

VOL. IX No. 35 SEPTEMBER 1935

Editorial Notes

IT has been said that ' all attempts at imaginative creation are merely rearrangements and combinations of known facts '. The facts of archaeology are stored in museums, where they may be arranged according to any one of several systems—geographical, chronological, or both. Or ' imaginative creation ' may select and arrange specimens so as to illustrate either the evolution of some special craft, such as fire-making, pot-making, fire-arms, or a subject, like magic.

There is no need to appraise the relative merits of these systems, for each has many, and there is—or should be—room for all in a civilized country. After conservation, the one thing essential in a public museum is that it should interest the public and be intelligible to them, and not misleading. It may be opportune to set down some impressions of recent exhibitions, temporary and permanent, leaving to others the invidious task of drawing conclusions.

In the Museum of the Trocadero at Paris there has been held a most interesting temporary exhibition, arranged by Monsieur Vayson de Pradenne, designed to illustrate the methods of hafting stone implements. The outstanding feature of this exhibition is that it is

arranged in accordance with the strictly anthropological method of Tylor and Pitt Rivers ; that is to say, that modern primitive devices are used to elucidate the culture of prehistoric man. For instance, one of the problems of prehistoric archaeology is—how did palaeolithic man hold his ' hand-axes ' (coups-de-poing, bifaces, bouchers) ? Did he mount them in a handle, or merely use them unhafted in his hand ? Monsieur Vayson de Pradenne demonstrates, by selected specimens, that the butt-ends of Chellean axes were generally left unworked ; but he suggests that when (as in the subsequent Acheulean period) the butt-end was chipped to an uncomfortably sharp edge, some such substance as gum or clay was stuck on to provide a grip and prevent the sharp edge from cutting the hand. A stone axe of palaeolithic type from California, with just such a gum ' empoignure ', is exhibited to illustrate this possibility. It is of course legitimate for anyone merely to guess at the possible uses of an implement he has never used ; but it is far more convincing thus to cite parallel instances from living, or recently extinct, cultures.

The exhibition also contains specimens to elucidate the hafting-methods of stone adzes, clubs, mallets, net-sinkers and anchor-weights (often indistinguishable from throwing-stones and even miners' hammers), notched and other knives (with instructive Eskimo parallels) ; spears and arrows ; and a most interesting collection of agricultural implements, such as sickles, digging-stones and tribulums.

Space forbids any account of the permanent exhibits of the Trocadero, which has recently developed into a museum of the first importance, abounding in suggestive anthropological parallels, such as that between the modern church paintings of Abyssinia and the Esthonian woodcuts of precisely similar religious subjects. Archaeologists will profit greatly by a visit. (The museum is open throughout public holidays, including any Monday that may be included).

The custom of holding temporary ' topical ' exhibitions has recently been adopted by the prehistoric department of the British Museum. At the moment of writing there are two, closely connected—one illustrating Mr C. W. Phillips's excavation of the Giants' Hills long

barrow at Skendleby, Lincs.; and another of neolithic pottery from Yorkshire long barrows, collected and arranged by Miss N. Newbigin. Both are full of interest. One is struck by the great advance of technique since Canon Greenwell's time; making possible the detection of traces of hurdle-work in a damp chalk mound 4000 years old, and the exhibition of a finished model of it within six months of its excavation. The use of plans, models and photographs, both here and amongst the permanent exhibits, is a welcome new departure, and one that is obviously appreciated by visitors.

With the Trocadero still fresh in mind one passes hurriedly and with averted glance through the Ethnographical Gallery; ashamed that the anthropological wealth of a mighty Empire (or is it a Commonwealth ?) should have to be crowded into a room no bigger than a small suburban garden. One crosses a wooden bridge and enters a clean room full of light and modernity, devoted to the dawn of civilization in the East. Here in the Babylonian room are displayed, amongst other things, the glories of Ur which have just been so finely published by Sir Leonard Woolley. Against one of the walls are no less than seven cases of prehistoric painted pottery from Arpachiyah, Jemdet Nasr and the lowest levels at Nineveh.

The wealth of material and the skill here displayed is in striking contrast with the poverty of the adjacent land of Palestine. Year after year the ancient sites are searched by optimists, but only rarely do the results justify the labour invested. The discovery of inscribed potsherds of the period of Jehoiachim (608–597 B.C.), recorded in the *Illustrated London News* (6 July, p. 19), is a notable event, connecting the archaeology of Tell Duweir with the recorded history of Lachish. These finds, and others, have been exhibited at the Wellcome Research Institution (183 Euston Road, London). The site is being excavated by Mr J. L. Starkey, Director of the Wellcome Archaeological Research Expedition to the Near East.

Not the least interesting remains are the caves, which were inhabited during the third millennium, and when subsequently abandoned were used as burial-places. Is it possible that here in Palestine and Syria

there may be found a continuous evolution from the natural cave of mesolithic and earlier times (which was used by the living and the dead), through these rock-hewn dwellings and tombs to the megalithic imitation-cave (if such it was, as we have long suspected), erected above ground ? The possibility is worth bearing in mind, if only as a working hypothesis ; for, if verified, it might help to explain the megalithic sequence on our own western Atlantic sea-board. We shall look forward to seeing the published accounts of the excavations.

Finally, at the Burlington Fine Arts Club was exhibited a recherché collection of museum specimens of primitive art (admission was ' by invitation ' only). The effect of seeing so many primitive masterpieces in one room was rather disturbing, like a visit to a mental hospital. One turned with relief to the Eskimo ivories, which at any rate display the healthy naturalism of the hunter. None of them however can equal in excellence the scratched scenes of Eskimo life done on a walrus-tusk for Lenin, but which somehow failed to reach him and is now exhibited in the Trocadero at Paris.

The term ' primitive ' is of course correct according to current usage ; but one wonders whether these horrible idols from the marginal Pacific and African wilds are *really* primitive, or not rather degenerate ? In this connexion Monsieur Vayson de Pradenne's theory is of interest (see pp. 305–10). When we find examples of art which is primitive in the literal sense of the word, as on the walls of caves in France and Spain, and on African rock-shelters, that art is, by universal consent, neither crude nor repulsive.

An excellent idea was to leave on the table a folder with press-cuttings. It was interesting to read them after a first inspection of the cases, and then to have another look at some. If only a similar practice were possible in the book world ! Of the criticisms, that of Mr Frank Rutter (*Sunday Times*, 2 June) struck one as the best, that is to say, the one that coincided most nearly with one's own.

The Racial Question—Theory and Fact*

by Julian Huxley and A. C. Haddon

'RACIAL problems' are among the urgent actualities of twentieth century politics. But as soon as we subject the concept underlying them, that of *race*, to dispassionate analysis, it turns out to be a pseudo-scientific rather than a scientific term. In other words, its use implies an appeal to the accuracy and to the prestige of science; but on investigation it turns out to have no precise or definable meaning, and it can then, like other pseudo-scientific terms, readily be employed to rationalize emotion, and to bolster up the appeals of prejudice, by giving it a meaning to suit the context.

The term race is currently used in several quite different senses. In the first place it is used to denote one of the major divisions of mankind—black, white, yellow and brown. Secondly, it is used to denote the actual human stock of a particular country or nation and its biologically transmissible characteristics: for instance even the most ardent British upholders of the Nordic theory cannot mean by the 'British race' anything more than the actual inhabitants of Great Britain and their descendants overseas. Thirdly, it is used to denote a hypothetical 'pure race' which is taken to have existed in the past and to have become later somewhat contaminated by admixture with alien elements. This lies behind the idea of 'the Germanic race', for instance. Fourthly, it is used to denote a local population which by reason of isolation has become fairly uniform and stable in physical type—for instance the Veddas of Ceylon.

It is also sometimes used in a wholly inadmissible sense to denote the peoples who speak a certain type of language, for instance in the phrases 'the Aryan race', 'the Latin races', etc.

On all these uses, scientific analysis, backed by the results of modern genetics, throws a pitiless light. It is probable that our species, during its early evolution, became divided up into geographical varieties, each more or less isolated from the others, and each evolving so as to become adapted to its climatic environment. The black variety

* This article will appear as the concluding chapter of 'We Europeans' by J. S. Huxley and A. C. Haddon, to be published in September.

adapted to hot climates, the yellow variety to dry conditions, and the white variety to north-temperate latitudes, are the most prominent examples. Such varieties would then correspond to the ' geographical races ', or subspecies as they are now generally called, to be found in many animal species. It we wish to retain the term *race* for such groups, they should be called ' primary races '. However, since the term race has been largely abandoned in zoology, and since in anthropology it is used in such a confusing multiplicity of senses, we had better employ the term *primary subspecies*. But—and this cannot be too strongly emphasized—such primary human subspecies are entirely hypothetical, a matter of inference only. Man's incurable and increasing propensity to wander over the face of the globe had effected a thorough mixing between the hypothetical primary races long before the dawn of historic period, and blurred the sharpness of their outlines and in some cases made it all but impossible to deduce their original type. A typical white man is very different from a typical Chinese or a typical negro. But white is connected with black and also with yellow through every gradation of type, and in each case along several distinct main lines of crossing. Again, the simple classifications which at first suggest themselves all break down at one or another point. For instance, the Australians, though black-skinned and undoubtedly primitive in many ways, show the same character of hair as Europeans. We cannot assign them with certainty to a definite original subspecies. No single scheme of classification, in point of fact, has been devised which will provide a satisfactory pigeon-holing for the various human types in existence.

It is here that genetics steps in. The modern study of heredity, based on Mendel's great discoveries, has shown that after a cross between two distinct strains, blending inheritance, such as used to be assumed by anthropologists, does not occur, but that all kinds of different combinations of the original characters of the two stocks are brought into being. This is due to the fact that hereditary transmission is by means of discrete living particles, called *genes*, which reproduce themselves, and can be recombined in the most various ways.

Accordingly, if two primary races meet and mix, their characteristics may be combined in their descendants. Originally, black skin may invariably have gone with flat nose and thick lips. That, however, provides not the slightest reason why it should always do so. After a cross with a stock with light pigmentation and delicate features, the combination of dark skin and delicate features may occur. Since dark skin is an advantage in low latitudes, such a new combination of

characters has, it appears, been favoured in several instances of actual crossing, notably for instance in India.

Similarly, yellow skin and round head seem to have been originally associated. But the two became uncoupled with the greatest facility after crossing with strains possessing different head-form and skin-colour.

Another result of the existence of definite genes as the carriers of hereditary constitution is that after a cross the resulting population will not tend to a mere average between the two original ingredients, but will, in the absence of social or natural selection, continue to produce a great diversity of types, generation after generation. There is not the slightest tendency for the population of Britain to become all medium brown in hair-colour, nor for that of Germany to become all medium long in skull-shape. In each generation dark and yellow hair, long and round heads, continue to be produced, and to be produced in about the same percentage of the population.

Now it will be clear why no single scheme of classification can satisfactorily pigeon-hole all known human types, or even deduce without danger of error the number and characteristics of the original ' primary races ' of man. Whereas in the evolution of animals, there is a constant branching, each branch being permanently isolated after a certain degree of differentiation by becoming incapable of fertile crossing with other branches, in man the branches constantly meet and unite and produce new types of shoots. The conventional ancestral tree is a suitable method for representing the descent of animal types: it is wholly unsuitable for man. Further, while animal types can be reasonably classified on the basis of using degrees of resemblance to indicate degrees of relationship, no such simple scheme will serve for man. In fact, with a species in which intercrossing of divergent types is so prevalent as our own, *no* simple system of classification can ever be devised to represent the realities of the situation.

Theoretically, we could give a scientific description of human groups by means of the frequency-distribution of different hereditary factors or genes which they contain, and the correlations denoting the tendency for the different genes to be associated. This, however, is at the moment a mere ideal (save for the blood-group genes[1]) and is never likely to be fulfilled except for the genes responsible for a selected group of well-marked physical characters. In the absence of this, we

[1] An article on blood-groups and race, by Dr Millot, will be published in the next number of ANTIQUITY.

are driven back on measurable physical characters : here again we must content ourselves with the frequency-distributions and inter-correlations of various well-marked characters to be found in particular groups. Our picture of the human species will be like a contour map, a region of high frequency for, say, round-headedness being separated from another similar peak by a ' valley ' of low frequency ; the gradients in frequency will of course vary in different directions. Furthermore, the contour map for one character will not necessarily resemble that for another.

These considerations rob the term *race*, as applied to existing human groups, of most of its significance. All existing groups must have owed a great deal to crossing. It is only when a group has been relatively isolated for long periods that it will, under the influence of selection, have achieved such stability. Such stabilized groups might be called ' secondary races ', but they are extremely rare.

In most cases it is impossible to speak of the existing population of any region as belonging to a definite race, since as a result of migration and crossing it includes many types and their various combinations. For existing populations of particular areas, the word *race* should be banished, and the descriptive and non-committal term *ethnic group* should be substituted.

With regard to the separate types which can be distinguished within an ethnic group—for instance in Central Europe today the tall fair-haired Nordic type, the medium-statured, round-headed Alpine type, the short, dark-haired long-headed Mediterranean type—these might perhaps be called ' racial types ' and taken to represent originally pure stocks which have later crossed with each other. They would then represent further geographical subdivisions of the original ' primary races ' of man. However, such a supposition begs a number of questions. Above all it presupposes that these hypothetical stocks once existed in a state of complete or almost complete genetic purity. There is no concrete evidence for this, and indeed much evidence to show that mixture has been proceeding not merely during the historic period, but back far into prehistoric times. It is more probable that even six or seven thousand years ago, such groups only represented points of high frequency for certain characters on the ethnic contour map, and had already suffered much crossing with other groups. *Race* has so many connotations—of homogeneity, of purity of descent, and so forth—that it is a pity to use it where we are not certain of our ground. Accordingly it is better to resort to a non-committal term like *ethnic*

type or *genetic type* rather than *racial type*. In so far as the different types were once geographically isolated, they may be called 'secondary subspecies'.

A given region of Europe is thus populated by a highly mixed ethnic group in which a number of distinct ethnic types and the products of their intercrossing are to be distinguished. The ethnic types are to be found more or less pure and in relatively high concentration in certain areas—for instance the Nordic type in northern Scandinavia and the Mediterranean type in southern Italy. There is reason to suppose that in earlier times they existed in higher concentration and greater genetic purity, but never wholly undiluted or free from crosses with other types. They would thus represent partial geographical differentiations of the human species, of a kind rather different from anything found in animals. Their later intermixture produces wholly new combinations of characters, which may become stabilized as new 'ethnic types'—a process apparently without parallel in other organisms.

Before proceeding further, there are one or two other popular fallacies waiting to be exploded. One is the misconception that a race is a collection of people all descended from a single original couple. This idea seems to spring largely from the family trees beloved of genealogists of an earlier century, in which a family is traced back to a single founder and his wife. Such family trees in reality trace the descent of a *name*, and have little to do with biological heredity; they are social rather than genetic. On the genetic plane, the idea of descent from a single couple is in any case vitiated for man by the amount of intercrossing which has taken place between groups. Our ancestry will diverge as well as converge as we trace it back. With animal evolution, in tracing back the pedigree of a group you will, it is true, find convergence of separate branches (species, genera, etc.) to a common stem. But this is not the same thing as convergence to a common ancestral pair; and as a matter of fact we can be certain that the common stem is always a large body of individuals, with a certain degree of genetic variability. Change in evolution does not take place through the sudden appearance of a new sport in a single male and female who then become the ancestors of the new species or strain; it occurs by means of the spread of mutant genes through the population. The evolving strain is the whole population of a given area.

Another and more serious misconception is that language is a criterion of race. There are a great many examples in history of a conquering people forcing its language on the conquered; and also a

great many examples of the converse process, of the conquering invaders adopting the language of the country they have invaded. It is thus quite improper to speak of the ' Celtic race '. There is (or rather was) a group of Celtic-speaking peoples, but the fact of their all speaking Celtic is no proof of common descent or genetic affinity. Similarly there is not and cannot be such a thing as an Aryan race, since the term Aryan refers to language.

This fallacy with regard to language is a particular case of a similar fallacy with regard to social culture in general. Habits, traditions, machines, dress, art, institutions, gestures, ideas—all these as well as language are part of the social environment of human beings. They are not inborn, but have to be learnt or built up by experience. None of these can serve as any criterion of racial affinity between peoples. For instance, if we had nothing to go by but specimens of machinery and other material objects, we might conclude that the modern Japanese were much more closely related to the Europeans than to the Tibetans or other Mongolian peoples: we should, however, be wrong. Culture, both material and spiritual, can spread by culture-contact, whereas physical characters can only spread by actual intercrossing.

Nor can the cultural level of a people serve as evidence of its innate ability or the reverse. The ancient Romans, perfectly correctly, regarded the inhabitants of this country and of Germany as uncivilized. They would have been considerably surprised to find them leading the way in civilization a mere fifty or sixty generations later. In ancient Greece, some very eminent philosophers went further and ascribed to the northern barbarians an innate incapacity to rise to the attainments of the Greeks. They were confusing cultural level with innate capacity. The rapid rise of Arab culture to a high intellectual level and its subsequent fall and stagnation is another example. We must beware of falling into the same fallacy ourselves as regards the so-called ' backward peoples ' of the modern world. It is by no means impossible that our attitude of superiority towards the African native, for instance, may prove to be as unjustified as that of the ancient Greeks and Romans to our own ancestors.

On *a priori* grounds we may expect differences in innate ability to exist between different peoples. But achievement by itself is no guide ; and so far no satisfactory method has been devised of testing differences in innate intelligence or other psychological qualities between people with very different education and culture. The differences in social environment override the differences in genetic equipment.

Finally there is the fallacy which equates *race* with *nation*. Here again there is confusion between a genetic and a social concept, but the case demands special treatment because of the special dangers inherent in this particular fallacy. The most obvious way of demonstrating that it is a fallacy is to consider the United States of America. There is, very definitely, an American nation, whose nationalism has indeed been growing more pronounced during the last few decades, but, equally definitely, there is no possibility of speaking of an American race. Indeed the popular phrase so often applied to America, ' the melting-pot of race ', demonstrates the contrary. A nation is a group of people with a common tract of country, bound together in a common State by common history, common sentiment and traditions, common social organization, and usually (though not always—witness Belgium or Switzerland) by common language. It is also bound together by being the unit to which the individual belongs, so that he regards other individuals belonging to the same unit as in some way allied with him, while individuals belonging to other similar units are ' foreigners ', in some way alien to him. This sense of solidarity with co-nationals and of separateness from other nationals is of the essence of nationality. The nation, however, is a particular phase in the evolution of human groups, not anything permanent or inherent in human nature. It is in essentials a product of the last three hundred years, and quite different in nature and organization from other units of the same general type, such as clan, tribe, city-state, or empire. The idea of the blood-tie has been used to strengthen national sentiment because of the importance of such sentiment for unity and effectiveness in war. But mass migration and military conquest, and the adoption of foreigners into the group by legal change of citizenship and by marriage, when the wife and children follow the father's nationality, make the thesis of common descent impossible to uphold. The idea of a British, a French, a German, or an Italian race is a political fiction, and a dangerous one at that.

Coming down from the general to the particular, we can here deal with two so-called ' race ' problems which are of immediate political importance—the Nordic and the Jewish. Beginning with the latter, we find that the Jewish problem is far less a racial or genetic than a cultural one. The Jews are no more a distinct sharply marked race than are the Germans or the English. They are originally of mixed descent, comprising true Semitic, Hittite, Armenoid, and probably other elements. During their dispersal they have interbred, legitimately and illegitimately,

with the surrounding population so that a number of genes derived from the immigrant Jews are scattered through the general population, and the Jewish communities have come to resemble the local gentiles in many particulars. In this way the Jews of Africa, of eastern Europe, of Spain and Portugal, of Germany and so on, have become markedly different from each other in physical type. What they have preserved and transmitted is not racial qualities, but a religious and social tradition. The Jews do not constitute a definite race, but a pseudo-national group[2] with peculiar historic traditions and a strong religious basis. Biologically, it is as illegitimate and almost as absurd to speak of a Jewish race as of an Aryan race.

The Nordic theory is in another category. Instead of ascribing racial qualities to a group which is today essentially held together on a cultural basis, it takes a hypothetical past race, ascribes to it certain valuable qualities, notably initiative and leadership, and then whenever it finds such qualities in the mixed national groups, ascribes them to the Nordic elements in the population. It then goes further, and sets up as a national ideal a return to purity of Nordic stock. This theory has exerted a considerable influence on the immigration legislation of the United States, and, in combination with a theory of Jewish racial inferiority, is playing a leading part in shaping the course of affairs in Germany today.

The facts of the case are as follows : The Nordic race, like other ' pure races ', is hypothetical. There does, however, exist a Nordic type. This occurs with only a moderate degree of mixture in parts of Scandinavia, and is also to be found, but much mixed with other types, so that all intermediates and recombinations occur, in northern Europe from Britain to Russia, with pockets here and there in other countries. On various grounds we can be reasonably sure that this distribution is the result of the invasion of Europe by a group largely composed of men of this type—perhaps in the degree of purity in which the type is now found in parts of Scandinavia. This group was the ' Nordic race '—a secondary subspecies in our sense. It is not certain where it originated, or when its important migration took place, but many authorities believe that it came originally from the steppes of southern Russia.

But besides these facts and deductions, there exists what one can only characterize as a Nordic myth, ascribing to the Nordic race most

[2] The term *pseudo-national* is used for want of a better. It is not intended to imply that they constitute a nation in the accepted sense of the word.

of the great advances of mankind during recorded history, and asserting that their qualities of leadership fit them to rule over other races. The Aryan and Germanic myths are variants on the same theme.

These contentions appear to be based on nothing more serious than self-interest and wish-fulfilment. In the first place, it is quite certain that the great steps in civilization, when man learned to plough, to write, to build stone houses, to transport his goods in wheeled vehicles, were first taken in the near East, by peoples who by no stretch of imagination could be called Nordic, but who seem in point of fact to have been largely of the dark, Mediterranean type. Secondly, it is true that great advances in civilization have sometimes been observed in history when invaders of relatively light-skinned type have irrupted into countries populated by other groups—notably in Greece, though here round-headed as well as long-headed elements were included among its invaders. But in such cases, both types appear to have made their contribution, and the result can be ascribed to the vivifying effects of mixture and culture-contact with as much propriety as to the inherent qualities of one of the types concerned. Indeed, where the Nordic type is most prevalent, in northern Scandinavia, there is also found among the people a tendency to introspection, accompanied by a very high suicide-rate ; this may well be an effect of the northern environment, but may equally well be a characteristic of the type. The greatest achievements of modern civilization have, by and large, occurred in regions of the greatest mixture of types—Italy, France, Britain, and Germany, to mention only four nations. In all these countries of ' mixed race ', owing to the nature of Mendelian inheritance, it is rare to find pure Nordic types. The great bulk of the population will contain genes derived from two or more original sources. In a nation like Britain or Germany, the Nordic type is irrecoverable for the country at large ; the population as a whole is an inextricable mixture. The Nordic type may be held up as an ideal, but this ideal is genetically unattainable, and will not affect the biological realities of the situation.

Furthermore, when we look into the facts of history, we find it far from established that men of pure or even approximately Nordic type have been the great leaders of thought or action. The great explorers of Britain displayed initiative, but hardly any one of them was physically of Nordic type : the majority of the most celebrated Germans, including Goethe, Beethoven and Kant, were medium- or round-headed, not long-headed like the typical Nordics. Napoleon, Shakespeare, Einstein —a dozen great names spring to mind which in themselves should be

enough to disperse the Nordic myth. The word *myth* is used advisedly, since it frequently plays a semi-religious rôle, as part of the theology for a creed of passionate racialism.

From what has been said, it will be clear that ' race-mixture ' has in the past been beneficial. The British contain strong Nordic and Alpine elements, with a moderate admixture of Mediterranean types. In the Germans, there is a much stronger Alpine element, and genes from the yellow races have crept in *via* Russia. In France, a very similar mixture is visible, with a greater preponderance of more extreme Mediterranean types in the south. The Jews are of mixed origin, and have been steadily growing more mixed. America is proverbially a melting pot. The Japanese are so mixed that no full account of their origins can at present be given.

In human affairs it is usually impossible to say which of a number of possible causes is decisive. A nation with a mixed population achieves great things. Is its greatness due to the genetic mixture in its people, or to the culture-contacts that have been brought about ? Or is it due to neither of these things, but to favourable economic circumstances ? It is never possible to be sure : it may be due to all three simultaneously. At any rate, we can assert without contradiction that genetic mixture of human types is certainly not harmful, and that it is to be found in every people which has achieved great things in history.

But this does not imply that race mixture must always be good. In the above examples, we are dealing with mixture between minor subdivisions of one ' primary race '. What of mixture between the major subdivisions of mankind—between black and white, for instance, or white and yellow ? In this field, the most violent feelings are aroused. We need only cite the strong feeling in the United States against white intermarriage with negroes or Chinese, in South Africa against the Bantu admixture.

When we make a comparative survey, however, we find that this prejudice is not universal. The feeling against intermarriage with black or brown is far less marked in some countries—e.g. most Latin nations—than in others—e.g. Britain or the United States. For instance, Portugal contains a considerable proportion of negro genes, amassed by crosses in Brazil. In the South American countries there is little or no social discrimination against the offspring of mixed marriages, and Indian, negro and white stocks are inextricably blended. The population of Mexico is predominantly one of hybrids between white and Indian. In the British West Indies there is a large and respected class

of half-castes arising from negro-white admixture. In Soviet Russia, there is deliberate discouragement of all 'race prejudice'.

We need not multiply examples. What seems evident is that in this field too, it is not biological but cultural factors which are dominant. Where for instance a slave-class exists of markedly different ethnic type from their masters, it is clear that marriage with one of the slave type will be frowned upon. This will not, however, prevent the occurrence of sexual relations between the two groups, though these will be almost entirely between the men of the ruling class and the women of the slave class or type. The most obvious example is that of the relations of planters and slaves in the Old South before the Civil War. Far from there always existing a sexual repulsion between markedly different types, there is often a strong sexual attraction. The disapproval of 'miscegenation' is primarily social, not biological.

This does not, of course, mean that biological factors do not exist. They do exist in regard to the emotional attractiveness, or the reverse, of different ethnic types for each other. However, when we are dealing with the major divisions of mankind, such emotional barriers are certainly not of a primary nature. In suitable social environments, blacks, whites and yellows may exert a powerful sexual attraction on each other.

There is also the question of the biological results of wide crosses. Here it is extremely difficult to come to any firm conclusion. Sweeping assertions are often made to the effect that half-castes are always unreliable, that they share the defects of both parent stocks, and so on and so forth. Such statements usually have no biological foundation. In so far as they are based on facts at all, the facts are social. In many countries where diversity of ethnic type exists, half-castes are at a grave social and often at an economic disadvantage. This is usually so when the dominant or ruling caste is of different ethnic type from the bulk of the population, as between white and negro in the United States, or between white and brown in India. The half-caste is looked down upon by the dominant class, while he is often regarded as alien by the native or dominated class. Small wonder that he develops an unsatisfactory mentality.

Dismissing such cases, we are however confronted with the possibility that very wide crosses may give biologically 'disharmonic' results in later generations, by producing ill-assorted combinations of characters. Characters may be unduly exaggerated by the coming together of unfamiliar genes, or characters adapted to one environment may be forced to co-exist with those adapted to another.

If the primary subspecies of man were really developed in comparative isolation, each adapted to a different main type of environment, it may be argued that to upset the adjustment brought about by millennia of selection is bound to produce some disharmony. Further, if it be true that some ethnic groups possess a low average level of innate intelligence, to allow crosses between them and more intelligent types is a retrograde step.

These objections undoubtedly have some validity. On the other hand, there are arguments on the other side. Even if wide crosses should produce some disharmonic or maladjusted types, this will occur as the result of the great variability induced by such crosses, and this same variability may be expected to throw up also some exceptionally well-endowed types. Again, because types were well adapted in the past does not prove that new types may not be better adapted to the wholly new environments which man is busily creating for himself, and it may well be that new combinations of characters will be needed to cope with the problems of the future.

In general, however, the arguments on both sides suffer from their extremely theoretical nature. The consequences on both sides should logically follow from the premises, but we have no means of evaluating them quantitatively. When we come to facts, it appears that white-Japanese and white-Chinese crosses give very favourable results.

In any case, it would appear that the chief dangers, or at least those which at the moment bulk largest, are here too of a social rather than a biological nature.

Crosses between groups or classes of markedly different ethnic types within the same country, when they differ also in standard of living, social status, or general outlook, will have the effect of blurring the social barriers and economic distinctions between them. In certain cases, the ruling caste or class may find itself or its ideas swamped and diluted to vanishing point ; in other cases it feels impelled to guard its privileges. From a purely biological standpoint it might conceivably be a good thing to undertake mass crossing between say the British and the Bantu, or the Americans and the Chinese, on account of the new genetic combinations to be obtained. But the social systems involved would be unable to stand the strain. There is a limit to the amount of foreign stock which can be taken up by a nation in a given time. This is not due to the quantity of foreign genes *per se*, but to the mass of alien habits, prejudices, ideas and resistances which have to be overcome and assimilated.

Once again the term ' race ' proves to be misleading. The question of ' race-mixture ' turns out not to be *primarily* a matter of ' race ' at all, but a matter of nationality, class or social status. ' Racial crossing ' may be inadvisable, but chiefly because the ethnic groups involved happen to be in different national worlds or on different cultural levels. Policy in this matter can only be determined on its economic and social merits ; the biologist and the eugenist have here a negligible or at best a minor role to play as advisers. When politicians and propagandists seek to make out a purely biological case against intermarriage with such-and-such a people or ethnic type, we can always be sure that this is a rationalization, and that the real antagonism is to be sought in some other sphere. The biological reasoning is a cloak to fling over obscure, perhaps unconscious feeling. The ethnic group thus discriminated against serves as the scapegoat for some economic fear, some class prejudice, some nationalist ambition, some cultural pride, even some 'inferiority complex'. Similar types of rationalization, with the same lack of biological validity, have been employed to justify slavery, the caste system, class oppression, religious persecution. The argument against so-called miscegenation is only one among many thrown up by groups in power to justify themselves in their own eyes or in the eyes of others.

So far we have been considering only wide crosses, between markedly distinct ethnic types. Still more do our conclusions apply to crosses between minor varieties of the same primary subspecies, such as Nordic and Alpine, or ethnic groups differing primarily in quantitative ways, such as French and German, or sections of the population distinguished mainly on a cultural basis, such as Jew and Gentile, Catholic and Protestant. In such cases, when biological arguments are advanced to the detriment of one of the ethnic groups concerned, whether against intermarriage or civil equality, religious or economic freedom, we can be certain that these conceal another and more real reason, and that this is either fear of economic competition, or the psychological need of discovery of a scapegoat—or sometimes both in combination. We see this in the United States Immigration laws aimed at the populations of south and southeastern Europe, and in the anti-Jewish legislation and propaganda in Nazi Germany.

In Germany today in order to establish ' Aryan blood ' a man must present a pedigree clear of ' non-Aryan '—*i.e.* Jewish—elements for several generations back. The enormous number of cases in which one parent or grandparent of the most thoroughly ' German ' citizens has

proved to be Jewish shows how impossible it is to secure a ' pure Nordic stock '. Once more, indeed, the social and cultural plane is the more important. Germany has benefited a great deal from her Jewish elements—we need only think of Heine, Haber, Mendelssohn, Einstein. But in the economic depression, the competition of Jews in the professions, in finance and retail trade, was proving embarrassing, and in the revolution it was convenient to erect the Jews into a collective internal scapegoat, who could be blamed for mistakes, on whom to vent anger that must be restrained against external enemies. The danger, if danger there existed, was that in a time of exaggerated nationalism, the mass of Jewish tradition and culture was too large to be assimilated properly by the nation at large. Jewish germplasm in Germany has already been so much diluted by Nordic and Alpine genes, and has sent so many of its own genes circulating among the general population, that to attempt restrictions now against intercrossing is like locking the stable door after the horse has been stolen. In any case, there are no biological dangers involved, especially as on intercrossing the religious and cultural traditions of the Jews tend naturally to break down, and this in its turn helps to prevent the persistence of any differential reproduction-rate which may exist as between Jew and Christian.

It is instructive to compare the treatment of the Jew in Germany with that of the Kulaks in Russia. The Kulaks, by standing in the way of rural collectivization, were an obstacle to the Government's economic plans ; they also provided a convenient scapegoat for any mistakes and failures that might occur. Their persecution was as horrifying as that of the Jews. But at least it was not justified on false grounds of mysticism or pseudo-science. Their existence obstructed something which was of the essence of communist planning, and they had to submit or be killed or expelled. The Jews could not even submit. Because a false Absolute of race had been erected to cloak the economic and psychological motives of the régime ; they could only suffer at home, or in some cases go into exile.

Similarly in America. The real danger was that the American tradition might not suffice to absorb the vast body of alien ideas in the brains of the new immigrant hordes pouring into the country, that the national melting-pot might fail to perform its office, and might crack or explode. When immigrants came in small numbers they could be and were absorbed, from whatever part of Europe they chanced to hail, and in one or at most two generations had become an integral part of the American nation. Their Alpine or Mediterranean genes stood in the

way of the process no more than their previous Czech or Italian nationality. It was the size of the blocks of extraneous culture presented by twentieth-century immigration which constituted the problem.

It may well be that in many cases the discouragement of ' racial crossing ' may be the correct policy. But this will be primarily because such crossing will be a symptom of large-scale culture-contact, and that this culture-contact is in danger of bringing about economic or cultural changes which are undesirable, either in themselves or as a matter of immediate policy. In such cases it is best to prevent intermarriage (and extra-marital intercourse); but to do so by preventing the large-scale culture-contact—for instance, in inter-tropical Africa, by reserving as much as possible of the country as native areas, to pursue a development based on indigenous tradition and heading towards an African ideal, rather than to aim at introducing a permanent white element in economic competition with the native population.

So long as nationalist ideas, even in modified form, continue to dominate the world scene, the large-scale segregation of areas, each developing their own general type of culture, may be the policy to pursue. If unrestricted immigration seems likely to upset such a policy, restriction is justifiable, as with Asiatic races in Australia, and in the United States. But do not let us in such cases make a fetish of ' race ', or become mystical on the subject, or justify ourselves on false biological grounds.

Such considerations, however, apply only to major differences of type and culture. Within a single main ethnic group or cultural area, they are irrelevant. Notably in Europe, both ethnic intercrossing and culture-contacts have proceeded so far that ' racial purity ', like complete isolationism or self-sufficiency, is impossible of attainment. And because they are impossible to attain, they are dangerous to aim at; as an ideal, they contain unrealities and impossibilities which may destroy essential realities and thwart true possibilities.

The violent racialism to be found in Europe today is a symptom of Europe's exaggerated nationalism; it is an attempt to justify nationalism on a non-nationalist basis, to find a firm basis in objective science for ideas, passions, and policies which are generated internally by a particular economic and political system, and have real relevance only in reference to that system. The cure for the racial mythology, with its accompanying self-exaltation and persecution of others, which now besets Europe, is a tempering of the nationalist ideal, and in the practical sphere an abandonment of claims by nations to absolute sovereign rights.

To drive this lesson home will take time, and may even demand a new period of war. Meanwhile, however, science and the scientific spirit can do something by pointing out the biological realities of the ethnic situation, and by refusing to lend her sanction to the absurdities and the horrors perpetrated in her name. Racialism is a myth, and a dangerous myth at that. It is a cloak for economic and nationalist aims that in their uncloaked nakedness would look ugly enough. And it is not scientifically-grounded. The essence of science is the appeal to fact; and the scientific facts remain.

THE SCOTS DYKE AT OLLIVER PASTURE, NEAR RICHMOND, YORKS (*See* p. 283)
Ph. O. G. S. Crawford

Arthur and His Battles

by O. G. S. Crawford

THERE are two Arthurs; the Arthur of romance created by Geoffrey of Monmouth in the 12th century and revived, with embellishments, by Lord Tennyson in the 19th; and the Arthur of history. The one has profited greatly by the renown of the other. It is quite certain that no such person as the Arthur of romance ever existed, and he may therefore be dismissed by the historian as a character in fiction. There are some who even doubt the existence of the historical Arthur; but we are bound to accept him for several reasons. He is mentioned by name in the compilation called *Historia Britonum* and the passage in question, which is our only source for the twelve battles, 'belongs to the oldest portion of the work, and shows the vigorous development of legend about the hero's name within something like one hundred and fifty years of the time when he must have lived'.[1] Arthur is referred to by name in some of the Welsh poems which are accepted by scholars as originally composed long before the time of Geoffrey of Monmouth; and he is mentioned alongside of other heroes whose existence has never been questioned.

The strongest argument against the existence of Arthur is the silence of Gildas, a contemporary writer. It is certain that Gildas does not mention Arthur by name, even in the passage where he refers to the battle of Mons Badonicus, the last and most famous of Arthur's battles. Mr A. O. Anderson has suggested that Gildas had Arthur in mind in a cryptic passage (*urse, multorum sessor, aurigaque currus receptaculi ursi*), and he justly remarks that, if this contention of his should be admitted, it must prove the historical character of Arthur once for all.[2] But unfortunately Mr Anderson's ingenious suggestion cannot, from the nature of the case, be proved. After all, why should Gildas mention Arthur? Gildas was a publicist, not a historian; had he been alive today his denunciations would have been published in, let us say, *The Observer* rather than in *History* or Antiquity. He may have ignored Arthur because he had nothing against him, or because he thought him

[1] J. D. Bruce, *Evolution of Arthurian Romance*, 1923, I, 9.

[2] *Zeitschrift für Celtische Philologie* XVII, 404–6.

unimportant, or because he was not a king but merely ' dux bellorum '.[3] He was not writing history, and his oversight, if such it was, may be accounted for accordingly.

The silence of Bede is less disturbing. Bede wrote a couple of centuries after the period of Arthur, and he was therefore dependent upon earlier writers for his information. If they were silent on this matter, so was Bede. Moreover, Bede had no access to Celtic sources. The compilers of the Old English Chronicle could not be expected to mention their most doughty antagonist, and they do not. If we turn to our only other trustworthy sources, the Lives of the Saints, we find occasional references to an Arthur ; he is plainly a historical personage, but the Lives that mention him are all late, and it is impossible to discover how much of them is derived from earlier sources. One thing, however, is certain ; the Arthur of the Lives is quite distinct from Geoffrey's Arthur. He is merely one out of many petty tribal chieftains ; seen through priestly eyes he does not appear as a good man, but then few such did. The Arthur of Nennius, or of some later interpolator, was described as ' cruel from his boyhood, a horrible son, a horrible bear, an iron hammer ' ; and these epithets tally with the stories in the Lives of Cadoc and Gildas. (See under Loomis in Bibliography, p. 291).

There is one other source, the early Welsh poems. One can hardly call them trustworthy, because both composition and manuscripts are very late—post-Conquest and, what is worse, post-Geoffrey. Yet they are, so far as Arthur is concerned, almost or quite free from any Galfridian contamination ; and there is general agreement that they contain a very considerable kernel of really ancient and authentic matter. The difficulty is, to disentangle it from the later embellishments. There is the further obstacle that no good translation of them exists, and that much of what passes under that name is a collection of phrases that conveys no sort of coherent meaning to the reader.[4] One has fleeting glimpses of a warrior-chieftain perpetually fighting, though it is not always clear against whom ; and of one who was no greater or more important than several others of his kind.

---

[3] These words probably described some official military post ; Germanus was *dux belli* at the Hallelujah battle : Bede, *De Temporum Ratione* (Works, ed. Giles, 1843, v, 319).

[4] This defect is being remedied by the scholarly research of Professor Ifor Williams, who has already extracted several nuggets from the slag-heaps. See p. 323 of this number for a very full review-summary of his book, published, unfortunately for English readers, in Welsh.

Finally, we come back again to Nennius and his catalogue of twelve battles. From what source did he obtain them? Surely it must have been from some annals, long since lost, resembling the so-called Cambrian Annals which are contained in the same manuscript.[5] A northern source is suggested by the reference, in one manuscript, to Wedale, identified with a site in the valley of the Gala Water now called Stow, six miles north of Galashiels [*Wedale est in provincia Lodonesie nunc vero juris episcopi S. Andreae Scotiae, vi milliaria ab occidentali parte ab illo quondam nobili et eximio monasterio de Meilros*]. But this reference does not appear in the other manuscripts; it is an interpolation, and too much reliance must not be placed upon it. It merely proves that, at the time it was written, there was a local association of a certain northern site with Arthur. Similar associations could be cited for Wales and Cornwall. The fact is that at the beginning of the 12th century Arthur had already become a popular hero in the three Celtic regions of Britain. No doubt it was this fact that led Geoffrey of Monmouth to select him as the central figure of his romance. With the flair of the born journalist he sensed the popular feeling and met with the success he deserved. Unfortunately he posed as a historian, and was accepted as such by posterity.

We can detect the beginnings of the process even in Nennius. It is most improbable that his source, whatever it may have been, gave simply a catalogue of *Arthur's* battles. It is far more likely that Nennius selected them from a general list of events, not necessarily all battles; or he may have attributed to Arthur battles recorded (as they often were) without any information about the combatants involved or the result. The battles of this list may have been—probably were—spread out over a long period. In most annals[6] it is unusual for more than one

---

[5] Brit. Mus. Harleian 3859, written in the 11th century and composed about the middle of the 10th. See Phillimore, *Y Cymmrodor*, IX.

[6] One of the sources of the *Historia Britonum* may have been composed by Run, son of Urien (*Run mab Urbgen*); this is implied in Nennius, chapter 63. Now Urien was King of Reget, adjacent to and perhaps part of the kingdom of Strathclyde. What is more probable than that there existed, at such centres of learning as Whithorn or Glasgow, some records of a historical nature? However this may be, the mention of Run is a definite fact in support of a northern origin of part of the *Historia Britonum*, for Run's father Urbgen was a historical character who died between 572 and 579, and who was therefore born not long after the traditional date of Arthur's death (537) and probably a little before it. (See Bruce, *Evolution of Arthurian Romance*, 1923, I, 9 (note 19), quoting Thurneysen, *Zeitschrift für deutsche Philologie* XXVIII, 83 ff).

battle to be recorded in any given year ; indeed we should probably be not far wrong in estimating the period covered by these twelve battles at about twenty years or more, and at twelve years as a probable minimum. If that estimate is correct, their association all with one man is most improbable. The Arthur of legend retreats into the background and becomes a petty chieftain, or at the most *primus inter pares* ; but we are left with a residue, mostly insoluble, of actual history.

Before considering the battles in detail we must understand the political geography of Britain at the beginning of the Dark Ages. The dominant factor is the existence of two zones, highland and lowland (PLATE II).[7] These distinct areas have determined the course of British history and prehistory from the Beaker invasion in the first half of the second millennium B.C. right down to the Industrial Revolution, when the conditions were reversed. In times of invasion the lowlands were rapidly overrun by invaders from across the North Sea and the Channel, while the highlands remained high and dry. In such times the highlands became areas of refuge from the rising tide of conquest ; but eventually, after a period of border warfare, they were infiltrated by the lowland culture. These two zones correspond pretty closely to Haverfield's division of Britain into a civil and a military area.[8]

It would be natural that the people of the highland zone should acquire some sort of cultural and even political coherence when thrown back on themselves by the conquest of the lowlands, reinforced by piratical descents from Ireland. But no permanent political unity was ever achieved. There may have been temporary alliances ; individual leaders may have achieved some sort of temporary control over allied forces, such as the words 'dux bellorum' seem to imply. Culturally, Christianity formed a bond uniting Strathclyde, Wales and Cornwall. And here we may note that the highland zone seems to have consisted of two parts, the northern half being southwestern Scotland and North Wales, united by the sparsely inhabited intervening coastland, and the southern being South Wales and Cornwall (with Brittany as a kind of colony). Such a division is of course speculative and need not be insisted upon, for in any case we have evidence of actual contacts between Wales and Scotland. Cunedda left his

[7] Borrowed, by kind permission, from Sir Cyril Fox's *Personality of Britain*, p. 26 (2nd edn., 1934. Cardiff: National Museum of Wales).

[8] See Fox *op. cit.* figs. 13 and 14, from Haverfield and Macdonald's *Roman Occupation of Britain* (Oxford, 1924), figs. 21 and 20.

Scale $\frac{1}{4,250,000}$ of nature
67 miles to one inch

25 0 25 50 75 100 English Miles
50 0 50 100 150 Kilometres

PHYSICAL MAP OF THE BRITISH ISLES SHOWING, BY DARK SHADING, THE HIGHLAND AND LOWLAND ZONES OF BRITAIN (See note 7, page 280)

facing p. 280

PLATE III

THE ROCK OF DUMBARTON (ALTCLUT), STRONGHOLD OF THE KINGDOM OF STRATHCLYDE, LOOKING SOUTH (*See* p. 281)
Ph. O. G. S. Crawford

kingdom in the Eastern Lowlands of Scotland and settled in North Wales, driving out the Scotti (Irish) about 400. Kentigern followed much the same route nearly two centuries later. Gildas (if we may believe his biographer) spanned the whole tract, having been born on the Clyde (Arecluta), working in Wales and dying in Brittany. Cadoc had Scottish as well as Welsh associations. This unity, such as it was, of the Celtic West, was broken up by two decisive events—the battle of Dyrham in 577, which cut off South Wales from Cornwall, and the battle of Chester in 616 which severed the land-connections between North Wales and Strathclyde. Culturally the results may not have been important, for the sea–ways remained open. But politically it was otherwise ; for politics are based upon force, and the slow communications of those days would prevent a concerted attack from the two divided regions upon the common Anglian or Saxon enemy.

The Dark Ages in Britain may be regarded as consisting of a short period of conquest and settlement of the lowlands, lasting perhaps a couple of centuries at the most ; and a prolonged period of spasmodic warfare with the Celts of the highland zone which continued until the Norman conquest of Wales, though it ended sooner in the North.[9] At the time of the ' twelve battles of Arthur ' the land-route between Wales and Scotland was still open and in the hands of the Celts ; and although the Angles may have begun to filter into the southern end of the Pennines, in Derbyshire (where barrow-burials of the pagan period are common) it is unlikely that this was a factor of more than local importance. One political centre of Anglian power was in Northumberland, where the earliest known historical kingdom was established later with its ' capital ' or tribal stronghold at Bamborough. The whole extent of the eastern slopes of the Pennine ridge, the central watershed of northern England, was a region of friction ; and it is here that battles are to be looked for. Particularly north of the Tees ; for south of it the habitable limestone uplands of Yorkshire and Lincolnshire were protected by a thick hedge of primeval forest that ran right across England to the mouth of the Severn, breached only by a couple of Roman roads. Indeed the subsequent brilliance of the Northumbrian kingdom may have been due in part to just this fact, that it was *not* geographically isolated. By land it was not a difficult journey up the Tweed into Arecluta and thence to Dumbarton (PLATE III), the capital of the British

[9] A decisive stage of temporary equilibrium is marked by the construction of Offa's Dyke in the 8th century.

kingdom of Strathclyde.[10] By sea it was easy to sail north, as St. Cuthbert did, to the land of the Southern Picts, or south to the continent. Such maritime intercourse may well have prepared the way for that Anglo-Celtic art which is represented later by the Lindisfarne Gospels (see ANTIQUITY 1934, VIII, 43–57). But all this belongs to later times ; what concerns us now is the fact that in the 6th century Northumbrian Angles were brought into direct contact with Celts ; and that such contact, geographically inevitable, must have been more frequent and more hostile in the period of the earliest Anglian invasions.

This opposition of a native Celtic highland region to an invading host is not entirely speculative, or merely inferred from geography. It is attested by certain archaeological facts which have not hitherto been observed. The highland zone is defended by a group of six linear earthworks (two of them double), all facing south, southeast, east or northeast, starting from Manchester across Derbyshire to Sheffield and thence by Leeds and Aberford to Richmond and Stanwick. There is no need to describe them in detail since they are marked on the map of Britain in the Dark Ages (South Sheet) about to be published by the Ordnance Survey. They all have relation to Roman roads, and four of the six straddle them. Nico Ditch guards the roads entering Manchester (Mancunium) from the south and east. The Grey Ditch is an outpost looking towards Yorkshire and Lincolnshire. The ' Roman Ridges ' between Sheffield and Mexborough delimit the upland frontier with regard to an approach *via* Littleborough (Segelocum, later Tiowulfinga Caestir) and Doncaster (Danum). The other ' Roman ' dyke, running north from the Aire at Woodlesford, below Leeds, may have been the frontier of the kingdom of Elmet.[11] The remarkable double lines of the Becca banks bar the passage northwards along what was then and still is the Great North Road.

---

[10] It may be conjectured that it was by this route that Lindisfarne communicated with Iona. From Dumbarton the route would be by sea to Lochgilphead, thence by an isthmus road across Kintyre to Loch Crinan passing Dunadd (hence its importance) ; thence by Eileach an Naoimh (insula Ailech, the site of Brendan Moccu Alti's pre-Columban foundation, testified by existing ruins) direct to Iona across the Firth of Lorn, or possibly to Mull and thence by land.

[11] The exact extent of Elmet cannot now be determined, but Leeds, Barwick and Sherburn were all ' in Elmet ' and the last two are still so described. Of these three only Leeds lies behind the dyke. Probably the kingdom and the forest (silva) of Elmet were distinct, the forest occupying the lowland area east of the inhabited region, and forming its eastern frontier. The name of the forest would naturally outlive that of the Celtic kingdom, which became merged into the Anglian domains, thus losing its identity.

The well-named Scots Dyke (PLATE I) looks like a distant outwork of the kingdom of Reget ; it is thrown across one of the two main roads into Scotland (the western route) at a point just over a mile from Scotch Corner, where the east and west Roman roads to Scotland diverged. It faces east and was set in opposition to any who would cross the watershed by the route leading from Teesdale to the Upper Eden Valley, which historically belongs to the north—a tongue of Scotland protruding towards England.[12] The Scots Dyke touches the fringes of Dark Age history, for only seven miles beyond it was Catraeth, the objective of that famous raid from the land of Gododin, sung by the Welsh bard.[13]

The setting of ' Arthur's Battles ' will now perhaps be seen more clearly. It will at least be conceded that a *prima facie* case has been made out for the North in the search for the locality of some at any rate of these twelve battles.[14] Of all twelve, one at least seems plainly to be located in the North, the seventh, ' in silva Calidonis '. It is true that the late Mr W. G. Collingwood attempted to place it in the south of England ;[15] but, with the utmost respect for the memory and authority of that great scholar, I cannot accept his thesis. From classical times onwards the Caledonian forest has always been placed in Scotland, and the weight of tradition is to my mind overwhelming.[16] The difficulty has always been to get the Saxons there ; but if we adopt the suggestion I have put forward we are not obliged to do this at all. The hypothetical annalist used by Nennius may well have recorded an encounter between, for instance, a king of Strathclyde and a Pictish army. Whether that king was Arthur or someone else we cannot say.*

Even if this suggestion be turned down, it is possible to provide ' Arthur ' with Saxon foes in Scotland ; for Nennius himself states

[12] In the 10th century Rerecross on Stanemoor was the southern limit of the diocese of Glasgow and therefore probably of the ancient kingdom of Strathclyde; and one of its limits extended ' usque Loidam civitatem ', Leeds. Was the ' Roman Ridge ' in Elmet the frontier in this region ? See for the evidence, Haddan & Stubbs, *Councils* (1873) II, i, 11 ; Skene, *Chron. Picts and Scots*, 204.

[13] See Ifor Williams, *Proc. Brit. Acad.* 1932, 270–1.

[14] See also Sir Edward Anwyl's articles in *The Celtic Review.*

[15] ANTIQUITY, 1929, III, 295.

[16] A mysterious wood of Celyddon near Arderydd would be a much better region for the battle if it could be authenticated. See Skene, PSAS, VI, 94–7.

* I have already pointed out (ANTIQUITY, VIII, 202–4) that Caer Golud, associated in a Welsh poem with the name of Arthur, is to be identified with the Northumbrian fort on St. Abb's Head, the Coludesburh of the Old English Chronicle.

that the son and nephew of Hengist (Octha and Ebissa) were given land ' in those regions which are in the North next to the wall which is called Guaul '. He goes on to state that, having sailed ' around the Picts ', whatever that may mean, they ravaged the Orkneys and proceeded to occupy several regions beyond Mare Frenesicum,[17] as far as the frontier (*confinium*) of the Picts. The passage is obscure ; we do not know which wall is meant, nor can Mare Fre[ne]sicum be identified. Both the Firth of Forth and the Solway Firth have been suggested. The Firth of Forth seems improbable, for it is often mentioned by other writers and this name is not amongst the many applied to it. Moreover the Firth of Forth *was* the frontier of the Picts in the 5th century and for some time afterwards. The words of Nennius do not therefore make sense ; it is as if we were to say of the Moors in Spain that they ' occupied several regions beyond the Pyrenees, as far as the frontier of France '. If, on the other hand, it was the Solway Firth, it could mean that they occupied ' several regions ' between it and the Firth of Forth. Now there is some slight hint of Frisian settlement on the northern shores of the Solway Firth. The name Dumfries itself *may* mean the Fort of the Frisians ;[18] the word Fresicum (if that is the correct reading) should certainly mean Frisian ; and the existence of Frisians in this region at a later date is suggested by the character of the names on the Ruthwell cross.[19] Against this is the fact that, so far as we know, the son and nephew of Hengist were not Frisians. It is possible of course that there may have been a Frisian settlement in Dumfriesshire, quite apart from anything that Nennius may have said, though this seems historically improbable.[20]

But we need not be afraid of putting Arthur in the kingdom of Strathclyde ; for a Welsh triad gives, as one of his three capitals,[21] Pen Rionyd in the North. The other two occupants of the throne were Cyndeyrn Garthwys, the chief of bishops, and Gwrthmwl Wledic, the

---

[17] Another reading, palaeographically perhaps less likely, is Fresicum.

[18] Watson, *Celtic Place-names of Scotland*, 1926, 421–2.

[19] Report of the Historical Monuments Commission (Dumfriesshire) 1920, 238.

[20] For the general question see Skene, PSAS, IV, 169.

[21] Lleithiclwyth, literally 'throne-loads'. For this translation (and for much valuable help in interpreting the above passage) I am indebted to Prof. Ifor Williams, of Bangor University. I should add that Prof. Williams admits the difficulty of understanding exactly what is meant, and that my paraphrase ' capitals ' is an inference from the apparent meaning.

chief of elders. Now Cyndeyrn is ' certainly St. Kentigern ', according to Professor Ifor Williams, who would prefer therefore to identify Pen Rionyd with the Glasgow foundation of that saint rather than with the Galloway site on Loch Ryan, suggested by Professor Watson.[22] The difficulty is admitted ; but in favour of Professor Watson's identification it may be argued that Rionyd and Ryan can be equated philologically : that Ryan is the modern form of Ptolemy's Re-rigonion (meaning ' very royal '), and that close by, though not actually on the shores of the bay is Dunragit, meaning the Fort of Reget. This would be just the place for a royal throne. Whichever be the correct solution, we have an association of Arthur with a British kingdom of southwestern Scotland.[23]

The first of the battles was at the mouth of the river Glein[24] (*in ostium fluminis G.*). At first one thinks that the identification with the Northumberland Glen is obvious and difficult to attack ; but unfortunately that river has no mouth ! It is the name of a stretch of water between the Bowmont and the Till, and although the word ' ostium ' might describe its junction with another river, such a use would be, I think, unusual ; unless ' ostium ' is a translation of ' aper ', as it may well be. In that case the meaning of river-junction is quite normal. The Till formed the boundary of the domains of Lindisfarne in the 12th century (Simeon of Durham, Rolls Series, 1882, I, 199).[25]

The second, third, fourth and fifth battles were on a river called Dubglas ' in regione Linnuis '. Dubglas means ' black water ' and is a

---

[22] *Celtic Place-names*, 34.

[23] As regards the date in question Prof. Ifor Williams writes (in a letter dated 20 Sept. 1933) : ' The Triad comes from Hengwrt 536, now Peniarth 45, dated by Dr Evans " late XIII century ". Reports I, 379. Triads were collected and written down in the 12th century, *teste* the Black Book of Carmarthen, 1190–1200. The glorification of Arthur in this particular Triad suggests a rather late date, not earlier than the 11th–12th centuries, but before the Geoffrey-Caerleon business. Chronologically, of course, the association of Arthur and Kentigern is not possible '.

[24] The passage in Nennius describing the battles will be found in ANTIQUITY 1929, III, 297–8.

[25] *Et hic est Lindisfarnensis terrae terminus : A fluvio Tweoda usque ad Warnamuthe* [MS. *Pharnamude*], *et inde superius usque ad illum locum ubi haec aqua quae vocatur Warned* [MS. *Pharned*] *oritur, juxta montem Hybberndune, et ab illo monte usque ad fluvium qui vocatur Bromic, et inde usque ad fluvium qui vocatur Till : et tota terra quae jacet ex utraque parte ipsius fluminis Bromic, usque ad illum locum ubi oritur.* Warnamuthe is presumably in Budle Bay ; Hybberndune is Hepburn Moor ; Bromic is the Breamish, which becomes the Till at East Lilburn.

very common Celtic river-name, usually (but not always) describing the brown water derived from peat-moors.[26] There are many rivers once so-called all over Britain, though the modern forms[27] assume many shapes. Without some clue, identification therefore is hopeless. Unfortunately the region of Linnuis cannot be identified with certainty. The suffix -uis (or -wys, in medieval Welsh) represents an older Latin adjectival stem in -ens. Linnuis might therefore stand for Lindenses, just as Cludwys[28] stands for Clotenses, the people of Strathclyde, and Rhegedwys (Recetenses), the men of Rheged. Thus in practice in Welsh the termination always meant ' the people of '. It is, however, a familiar phenomenon that the names of a country and of its inhabitants are interchangeable.[29] ' The old Welsh Linnuis (which would be Llynnwys in medieval Welsh) can come then from Lindensis (provincia) or Lindensia, presumably referring to the Roman town of Lindum Colonia. Lindensia would explain the O.E. Lindissi, the modern region called Lindsey '. But we must not forget the northern Lindisfarne, suggesting another region so called.

The sixth battle was on the river Bassas. No such river is known, and speculative identifications with place-names in Bas- are therefore to be deprecated. The difficulty is increased by the existence of a recorded O.E. personal name Bassa.[30] Mr Jackson suggests that Bassas may contain the word *bas*, shallow, citing Eglwyseu Bassa in the Cynddylan poem, identified by Professor Ifor Williams with Baschurch in Shropshire.

The seventh battle was ' in silva Celidonis, id est, Cat coit Celidon '. This undoubtedly represents ' silva Caledonia ' or rather Calidona.* (The medieval and modern Welsh equivalents are Coed Celyddon). Welsh tradition seems to imply that it was in or near Strathclyde. On the other hand inferences from Latin writers would place it well north of the Forth. Ammianus Marcellinus (A.D. 380) recorded that the Picts were divided into two tribes (gentes), Dicalidonae and Vecturiones; and since the Picts never established themselves south of the Forth

[26] See Ekwall, *English River-names*, 1928, 129–33.

[27] Douglas, Dalch, Dawlish, Devil's brook, Divelish, Dowles brook, Dulas.

[28] Skene, *Four Ancient Books of Wales*, I, 363 ; II, 162, 406.

[29] I wish to acknowledge gratefully the criticisms of Mr Kenneth Jackson of St. John's College, Cambridge, which have been most helpful in dealing with Linnuis and several other points. The quotation which follows is from a letter from him.

[30] *O.E. Chronicle*, sub anno 669.

* See Pauly-Wissowa, s.v.

both these tribes must have occupied land to the north of it. The Dicalidonae are not mentioned elsewhere and the name is puzzling, but it must surely be connected somehow with the common name. Further research is required into the exact connotation of ' Caledonia ' in ancient writers.

The eighth battle ' in castello Guinnion ' has been attributed to the Roman fort of Vinovia, Binchester, near Bishop Auckland, co. Durham ; but it is said that Vinovia would become Gwynwy. The readings in the manuscripts of Nennius are very variable,[31] and one feels that the identification should not yet be entirely rejected. The term ' castellum ' would aptly describe a Roman fort, and the situation of Binchester, where the Great North Road of Roman times crossed Weardale, is a likely one for a battle. Weardale was at a much later date one of the principal avenues of Anglian penetration. A Welsh site, ' villam Guinnoui ',[32] seems to contain the same word. Dr A. O. Anderson's suggestion[33] of Crunzian in Stow, in the Gala valley, six miles north of Galashiels, seems to require the evidence of early forms to be convincing. The name is written Crunzie on the Ordnance Map, and is the site of an obscure farm of no apparent antiquity or importance.

The ninth battle was ' in urbe Legionis '. This can only be Chester, for the other legionary fortress, Caerleon on Usk, is always so described in Welsh literature, thus implying that when standing alone the ' city of the legion ' meant Chester. York, the other legionary fortress, is never thus described. A historical battle at Chester occurred in 616, but, apart from the lateness of the date, this resulted in a crushing defeat of the Celtic side, and the final separation of the Celtic zone into two regions (see p. 280). It is possible that the 'Arthurian' battle may have sprung from an earlier but unsuccessful attempt to drive in this wedge.

The tenth battle was ' in litore fluminis quod vocatur Tribruit '. The manuscript variations are considerable ; but they indicate that the proper name consisted of two elements, *tri* and *frut* (OC. **fruta*).† In some manuscripts the forms Trahtreuroit, Tractheuroit, occur, the first part being the OC. equivalent of the modern Welsh word ' traeth ', as

---

[31] Here too the difficulty of correctly separating the minims is very great.

[32] *Liber Landavensis*, 1893, 179 ; compare 191 and index.

[33] *Aberdeen University Review*, July 1927, vol. XIV, no. 42.

† Mr Jackson points out, moreover, that there are many philological objections to the explanations I have given here, and on the next page.

in Traeth Mawr, Traeth Bach, a sandy tract on the sea-shore. The second is a well-known word meaning stream or current ; it occurs in Camfrut[34] (oc. *Cambofruta), Guenfrut,[35] Frut mur,[36] and in the modern names of many English streams.[37] The same place is referred to in the ' Black Book of Carmarthen ' (12th century),[38] and it is even possible that one reference (Skene, I, 262) refers to the ' Arthurian ' battle (' Did not Manawyd bring perforated shields from Trywruid ? ') The site was certainly in the north, in the Gododin region. It is tempting to connect the -frut element with the Fords of Frew, in the Vale of Menteith, and we have Professor Watson's authority for doing so ;[39] but earlier forms are lacking. Here the main north and south route of Scotland is constricted between the edge of the Highlands (Ben Venue and Ben Lomond) on the west and the tidal estuary of the Forth at Stirling on the east. The Vale of Menteith itself is covered with peat-moss and before the clearing of Blair Drummond Moss there was only one possible crossing-place, between Doune and Kippen. On the modern road connecting these places are the three farms which preserve the name Frew, though all traces of the fords seem to have vanished. It is significant that one of the four lowland brochs stands on this road at precisely the best point, namely, where it leaves the firm ground on the north. No more suitable place for a fort or a battle could be imagined.

The word ' traeth ' is derived from the Latin *tractus ;* but it seems always to be applied to a tract of sand on the seashore. Otherwise one would ask whether here it might not have described the not dissimilar inland moor of Menteith ; and one might explain the word *Trifruta as referring to the three streams of Forth, Goodie Water and Teith which traverse it. But all this is highly speculative ; one cannot conclude with anything but a regretful statement that the site of the tenth battle is still quite uncertain, though the etymology of its name is plain and an identification seems not so hopeless therefore as it might be.

[34] *Lib. Land.* 1893, 228 (compare ' Lan Camfrout, c'est-à-dire le *lann* du ruisseau courbe ', between Dol and Tref Maoc in Brittany ; De la Borderie, *Hist.* I, 491).

[35] *Lib. Land.* 1893, 222 ; Ekwall, *River-names*, 1928, 463.

[36] *Lib. Land.* 1893, 122 ; identified with *ffrwd*, bounds of Llanarth, Mon.

[37] Instances in Ekwall, English Place-name Society, vol. I (Introductory volume), p. 28 ; see also Grundy in *Oxfordshire Charters* (Oxf. Record Soc.) p. 27.

[38] Trywruid, Tryuruyd, (ar) Traethev Trywruid ; Skene, *Four Ancient Books*, I, 262, 263, 368 ; II, 3, 51–2, 321, 351.

[39] Watson, *Celtic Place-names*, 52–3, 349–50.

The eleventh battle is associated with the name of a mountain called Agned and a battle whose name has so many forms that one despairs even of discovering the correct one, much less of identifying it. Agned is quite unknown ; and Skene's identification with Edinburgh[40] proves to have been obtained from Geoffrey of Monmouth[41]—a fact which probably explains why he never gave reasons or references for his identification ! With regard to the second name I confine myself to citing the record of a battle in the Annals of Tigernach (s.a. 727) called ' Cath indsi breguin ', (the battle of the island of Breguin). It may or may not refer to the same place. De la Borderie's identification with Bravonium (Leintwardine) is obviously impossible.

I do not propose to discuss the battle of Mons Badonicus, as I have no fresh evidence to bring forward.

Arthur was killed at the battle of Camlann, which has come down to us in the garbled form of Camelon. The fact is recorded in Harleian MS. 3859 (composed in the middle of the 10th century) under the year 537. Now Camlann may contain two well-known and quite common Old Celtic words, camb(o)-, curved, and landa,[42] later lanna,[43] an enclosure (represented by the modern Welsh Llan-). There is no place Cambolanda recorded ; but Camboglanna ((Birdoswald) comes very near to it, and it is possible to equate Camlann with Camboglanna. The place is a fort on the wall of Hadrian, and was the starting-place of a Roman road running north beyond the wall to Bewcastle and doubtless not terminating there. The name means ' curved glen ' and is admirably suited to the topography of Birdoswald.

There is, however, one other possible identification that must be considered. In the lists of the Ravenna Geographer there occurs the name Cambroianna. All three manuscripts give this reading, but it is nevertheless an impossible one, and must be emended. The first and most obvious emendation is to omit the ' r ' and write Cambo-. This (as will have been inferred) is quite a common word in Celtic, whereas Cambro- does not occur. Then, the three vowels -oia- cannot occur thus in juxtaposition,and some emendation is demanded. The simplest is to substitute ' l ' for ' i '. We then have Cambolanna,

---

[40] *Celtic Scotland*, 1876, I, 153.

[41] Ed. Acton Griscom, 1929, 259 (*agned quod nunc castellum puellarum dicitur*).

[42] E.g. Vindolanda (Chesterholm) the white enclosure.

[43] E.g. Lanna Iltuti, in the Life of Sampson, and frequently in the *Lib. Land.*

an intelligible word and one which exactly corresponds to Camlann. Unfortunately we don't know where it was ; the name occurs in a list of places between the two walls, and in a context which suggests Selkirkshire. One would like to connect it with the fort of Camelon just north of the Antonine Wall, near Falkirk ; but this is rather far north for the context, and the few early forms of Camelon are rather against this identification.

In either case Camlann was in the north. There are no other competitors ; for the name has nothing to do with the Camels of Somerset or Camelford in Cornwall.[44]

To sum up :—It is reasonably certain that a petty chieftain named Arthur did exist, probably in South Wales. It is possible that he may have held some military command uniting the tribal forces of the Celtic or highland zone or part of it against raiders and invaders (not all of them necessarily Teutonic). It is also possible that he may have engaged in all or some of the battles attributed to him ; on the other hand this attribution may belong to a later date. It is the present writer's opinion that the battles were obtained by Nennius from a written source, perhaps in the form of annals, though a bardic source is also possible. The battles may represent the opposition of the inhabitants of the Celtic zone (equated with Fox's Highland Zone) to attempts at penetration by Angles, Saxons and Frisians ; but some of them may also represent battles between Celts and Scots or Picts or between Celts and Celts, or between temporary alliances of almost any groups. These struggles formed the theme of bards for ages afterwards, just as did the Trojan war ; since they were largely carried on by the Celts for national and cultural independence they were sung in four out of the five large divisions of the Celtic-speaking world, and identifications

[44] I add some references to Camlann :—Bruce (*Arthurian Legend*, I, 45) quotes Aneurin Owen's *Ancient Laws and Institutes of Wales* (London, 1841), I, 678 : ' When the queen shall wish a song in her chamber, the bard will sing the song about Camlan '. This is from the code of Gwent, the earliest MS. of which, according to Bruce, dates ' from shortly before 1200 ; but Howel Dda, who is supposed to have compiled it in its original form, ruled in South Wales in the first half of the tenth century '. Stuart Glennie, *Arthurian Localities*, p. LXI, argues for Camelon near Falkirk, and so do Skene (*Four Ancient Books*, I, 60, 311), and Dickinson (*King Arthur in Cornwall*, 82). Bruce considers it must have been in the south (I, 73) but for historical reasons now rather obsolete. A ' bellum Camblani ' is mentioned in *Vit. Merlini*, line 929 (Faral, *La Légende Arthurienne*, II, 302, III, 334). Gamlan is mentioned in Skene's *Chron. Picts and Scots* p. 161, in a document which he dates 1211. Finally F. Lot has contributed an article (which I have not read) to *Romania*, 1901, XXX, 16 ff, on ' La bataille de Camlan '.

were naturally and easily made in each region. Such identifications are all late and of little if any historical value.

Finally, the renewed attacks upon Celtic independence which were made between 800 and 1200 may have revived the memory of Arthur in Celtic lands and caused it to be embellished with much imaginative detail. Geoffrey of Monmouth selected Arthur as the subject of his romance, which has no historical value ; and though the Arthur there represented is the Arthur of modern popular fancy, he has not the remotest resemblance to the real Arthur of history.

Bibliography*

P. K. Johnstone. ' The Victories of Arthur ', *Notes and Queries*, 2 June 1934, clxvi, 381–2 This is much the best article on the subject, and many of my identifications agree with the author's, though reached independently.

Ifor Williams. ' The Poems of Llywarch Hen'. Sir John Rhys Memorial Lecture, read 1 February 1933. *Proc. British Academy*, 1932, 269–302.

J. S. Stuart Glennie. *Arthurian Localities*, published as introduction to part iii (1869) of the E.E.T.S. edition of the m.e. prose Merlin (original series no. 36).

R. Hunt. *Popular Romances*, 3rd edition, 1881, 303–12. (' Romances of Arthur ').

Edmond Faral, *La légende arthurienne*, 3 vols., Paris, 1929.

T. Gwynn Jones. *Some Arthurian Material in Celtic. Aberystwyth Studies*, viii, 1926, 37–93.

C. Grant Loomis. *King Arthur and the Saints. Speculum*, a journal of medieval studies, published by the Med. Acad. of America, Cambridge, Mass. Oct. 1933, viii, no. 4. [Quotations from lives of Cadoc, Paternus, Carantocus, Efflam, Illtyd, Gildas].

J. F. Campbell. *Popular Tales of the West Highlands.* London, 1893.

W. H. Dickinson. *King Arthur in Cornwall*, London, 1900 (' wholly uncritical ', Bruce i, 72).

Charles Henderson. Cornish Church Guide, 1925, p. 60.

W. G. Gruffydd. *Trans. Cymmrodorion Society*, 1912–13, 30 ff.

J. D. Bruce. Evolution of Arthurian Romance. Göttingen, 1923.

J. Loth. *Revue Celtique*, xxx, 270 ff. ; xxxiii, 258 ff.

G. Schoepperle. *Tristan und Isolt.* Frankfurt a. M., 1913.

E. Chambers. *Arthur of Britain.* London, 1927, with bibliography of Arthurian localities, p. 293.

Henry Jenner. The Tristan Romance. *Journ. R. Inst. Cornwall*, xix, 464 ff.

Henry Jenner. Arthurian Place-names. *Journ. R. Inst. Cornwall*, xix, 46 ff.

H. O'N. Hencken. *Cornwall and Scilly.* [Methuen's County Archaeologies, 1932] ; see index under Arthur.

* This list is of course not complete. It merely includes some references that ought to be consulted but which are not referred to specifically in the text. I have not been able to consult them all myself.

Pyramids and their Purpose

III. Pyramid Mysticism and Mystification

by Noel F. Wheeler

AFTER a consideration of the Pyramid of Khufu and of its original purpose, it will be instructive to take a glance at the vast hosts of the Pyramid Mystics, those who in one way or another extract prophecies from the various measurements of the same Pyramid and its passages. The literature on this subject is almost overwhelming and its value can safely be said to be in inverse ratio to its volume; but there are many whose knowledge of archaeology or of the Pyramid in particular is not sufficient to arm them against this pseudo-scientific obsession.

There have been in the past, and are still, many strange beliefs and cults current in the world, such as flat-earth-ism, the transmutation of Shakespeare into pork, and those excellent people who have bought land on the Mount of Olives in preparation for the Second Coming. They all have their followers, who naturally believe in them, and they are all impervious to common sense. But the Pyramid has attracted a much more formidable concourse than any other subject, largely because of the imaginary mystery of the monument, the remoteness of its date, and the learned formulae and pages of calculus (above the heads of at least 90 per cent. of readers—fortunately), which cloak the looseness of statements of fact by writers on the subject. Let us see where it all began.

From quite early times the fact that the Pyramid was oriented pretty closely to the cardinal points was noticed, as was the roughly pole-star direction of the Descending Passage orifice, and these facts probably led some to think of finding further mathematical peculiarities. Herschel, the astronomer, wrote much in 1860 on these lines in the *Athenaeum*, and John Taylor, the father of the Pyramid mystics, wrote similarly (in 1859) under the title 'The Great Pyramid, why was it built and who built it'? But the greatest fillip was given to the movement by Prof. C. Piazzi Smyth, then Astronomer Royal for Scotland, who at Taylor's request made a scientific examination of the pyramid during the winter of 1864–5. He wrote 'Life and Work at the

Great Pyramid ', in which he started the ' pyramid inch ' myth and many others ; and everything which has appeared in print on the subject since is founded on Piazzi Smyth's deductions.

Sir Flinders Petrie came out in 1881 and made his survey of the Pyramid, and his actual figures agree for the most part with those of Smyth, but he gave it as his opinion that there was nothing in the theories. John and Morton Edgar in 1909 were on the track of theories ; they measured the Pyramid in great detail and made a number of valuable plans, but went well astray in ' Great Pyramid Passages, etc.', which in its later dress is ' The Great Pyramid, its spiritual symbolism ' (1924). In this latter publication are many misstatements of fact, many false deductions, false calculations, and wonderful theories. There are hosts beyond number of minor publications, either specifically on the Great Pyramid, or bringing it and its ' prophecies ' in ; and there is no point in noticing them since they do but repeat what Piazzi Smyth, Edgar, and Davidson have said more cleverly. Davidson's book, ' The Great Pyramid, its Divine Message ' (1927), is the precocious child of all this family and contains many hair-raising formulae and geometrical figures, all founded on the same sand as the rest.

That this farrago of nonsense should be read at all is remarkable, but that it should be believed, as it is, by large numbers of otherwise normal people is in itself a miracle. Let us take some of the points from the works of Edgar and of Davidson and see what they amount to.

Dimensions, Proportions, Etc.

(A) The value of π (3.14159). It is claimed that the Egyptians of the Pyramid Age knew and used this proportion in many places in the Pyramid of Khufu, that the base-perimeter to height proportion is double this.

The base-perimeter to height proportion, as can be seen from the table of ell measures in a previous article, is double 22/7 (3.14286) ; and the Rhind papyrus gives the estimation of π for the Middle Kingdom as 3.16049. So that a knowledge, in the Pyramid Age, of the true value of the 22/7 approximation is unlikely. Incidentally, the pyramids of Seneferu, and Henutsen have the same proportion ; while those of Khafré, Khafré's Queen, Menkauré, Sahure, Nefer-ir-ka-re and Ne-user-re differ but slightly from it.

In the maze of the π theories we find a statement by Edgar that the sum of the length and breadth of the sarcophagus equals the height multiplied by π. It does not.

(B) Mathematical miracles. Edgar states that the area of a certain triangle is exactly 20 times the horizontal length of the Grand Gallery. How 20 times a length can equal an area we do not know. Also Edgar

> ' The fact that there are 5 masonry courses in the King's Chamber walls, and that the topmost contains 7 stones, suggests the number 5.7. . . .'

This requires no comment, and the following is similar :—

> ' The total weight of every substance in the earth is, therefore, the mean weight of every substance. This mean, or average, weight is the standard for reference. Each individual substance, taken by itself, has a weight which is proportionate to the mean weight. This proportion is known by the term " Specific Gravity " ' (! !).

(C) Levels. Much is made by Edgar and Davidson of levels throughout the Pyramid, sometimes given to hundredths of an inch. An idea of the accuracy to be expected from the builders is got from a series of levels taken along the north face of the platform by the present writer in the course of the survey of the royal cemeteries. Levels were taken at intervals of $\frac{1}{8}$ base, *i.e.* at 9 equidistant points including the NE and NW corners (points 1 and 9 respectively). The results were interesting and gave the following differences from the mean value :—

Point 1	— 0.002m	4	— 0.007m	7	— 0.007m
2	+ 0.021m	5	0.000	8	— 0.020m
3	+ 0.006m	6	+ 0.009m	9	+ 0.005m

From this it appears that the builders started with the centre of the Pyramid side levelled, worked from this to the NE and NW corners, then from these corners to the mid-points between them and the centre, and finally from each of the 5 points above to the adjacent $\frac{1}{8}$-length point outwards from the centre. The errors have a maximum value of about 2 cms., and an average of 1 cm. ; it is foolishness to calculate levels based on these to greater accuracy.

(D) Proportions. Much is made also of the proportions of the Great Pyramid and its chambers, the sarcophagus, etc. That these are what were common in the Pyramid Age can be seen from the following table of the proportions of length, breadth and height, for a length of 1 :—

Structures	Length	Breadth	Height
Pyramid itself	1	1	.641
4th Dyn. mastaba IIIs (Junker) ..	1	.481	.167
IIIn ,, ..	1	.432	.182
IVn ,, ..	1	.432	.182
IVs ,, ..	1	.4	.182
Vn ,, ..	1	.404	.17
Vs ,, ..	1	.432	.182
VIn ,, ..	1	.417	.167
VIs ,, ..	1	.455	.182

	Length	Breadth	Height	
CHAMBERS				
King's Chamber	1	.5	.56	
Queen's Chamber (full height) ..	1	.911	1.073	
(side height) ..	1	.911	.81	
Average of 13 burial chambers in 4th Dyn. mastabas (Junker)	1	.986	.796	
Main hall of Uah-ka's tomb at Qau (Middle Kingdom)	1	.598	.379 & .319	
Burial chambers in above tomb ..	1	.936	?)	(two chambers
	1	.873	?)	of the many)
SARCOPHAGI				
Khufu	1	.43	.46	(excl. lid)
Khafre	1	.534	.447	(incl. lid)
Hetep-heres (Khufu's mother) ..	1	.476	.447	(„)
Meresankh II (Khufu's dtr.)	1	.426	.38	(excl. lid)
Hor-dedef (Khufu's son)	1	?	.34	(„)
Fefi, 4th Dyn. (S. Hasan's 'Giza') ..	1	.454	.391	(„)
From VIIn (Junker) 4th Dyn.	1	.394	.34	(incl. lid)
	1	.394	.32	(excl. lid)
From D100 (Junker) 4th Dyn. ..	1	?	.287	(„)
	1	?	.335	(„)
Cairo Museum, no. 27, 4th Dyn. ..	1	.517	.63	(„)
29, „ ..	1	?	.598	(„)
Cairo Museum, no. 31, 4th Dyn. ..	1	.45	.522	(„)
33, „ ..	1	?	.571	
11th Dyn. Sarcophagus of Sebekhetep at Qua	1	.392	.392	(excl. lid)
	1	.392	.498	(incl. lid)
11th Dyn. Sarcophagus of Wah-ka I at Qau	1	.4	.398	(excl. lid)
11th Dyn. Sarcophagus of Wah-ka II at Qau	1	.394	?	
Late Sarcophagus of Pabasa (600 B.C.)	1	?	.288	

ANGLES		
Elevation of Ascending Passage, Khufu	26½°	
Descending Passage, 3rd Pyr. ..	26°	
„ „ Khufu Queen	26½°	
„ „ 3rd Pyr. Khufu Queen	27°	
Plug Passage, Wah-ka II, Qau ..	32½°	(11th Dyn.)
Descending Passage in Qau tombs	30°	(„ „)
	32°	(„ „)
	32½°	(„ „)
	35°	
VARIOUS		
Length of one plug-block, Khufu	2 ells, 6 hands, 1 finger	
„ „ „ Wah-ka II (Qau, 11th Dyn.)	2 ells, 4 hands, 2 fingers	

From the table (pp. 294-5) it is clear that proportions are very much the same in a number of cases, even from different periods. Compare particularly : (*a*) King's Chamber and Cairo Museum sarcophagi of 4th Dyn. ; (*b*) Queen's Chamber and Junker's mastaba burial chambers of 4th Dyn. ; (*c*) sarcophagi of Khufu, his son Khafré, his mother Hetep-heres, his daughter Meresankh II and others ; (*d*) passage angles ; and (*e*) plug-block lengths.

(E) Unit of measurement. The invention of the ' Pyramid Inch ', .999 inches, by Piazzi Smyth was a masterpiece. It was assumed by him to be the unit of measure simply because its assumption made certain measurements fit in with astronomical and other numbers ! The method of making these figures fit exactly is also a masterpiece. If the Egyptians made a passage, as they did, slightly wider in one place than another—inevitable from the nature of their tools and instruments —then a measure between these limits is assumed to suit what is required ; for instance, if the limits happen to be 3 inches and $3\frac{1}{2}$ inches, then the assumed ' intended ' measurement would be taken as 3.14159 and much marvel evoked because it equals the value of π. Another popular method is to add the required amount to a measurement to bring it to what is wanted, and call this addition a ' special number ' of the Pyramid or of the chamber in question ! In this way, in various parts of his book, Edgar has 10, 8, 7, 5, 3, 36 as ' special numbers ' as convenient; and multiplies gaily by 100, 1000, and larger numbers as though it signified nothing.

Geographical and Orientation

Edgar states :—

> ' . . . there is more land surface in both its (the Pyramid's) meridian and its latitude than in any other meridian and latitude ; while its nether meridian . . . ranges its whole length through water except for a short distance near Behring's frozen straits. For this reason, Professor C. Piazzi Smyth claimed that the meridian of the Great Pyramid is by far the most suitable zero of longitude for all nations '.

The meridians of 22°, 28° and 105° east, and the latitude of 45° north, all have a longer reach over land, and there are probably many others. The ' short distance near Behring's frozen straits ' is merely a distance of some 800 miles through the middle of Alaska !

Another point made much of by Edgar, and repeated by Davidson, is that the true bearing of Bethlehem from the Pyramid is the complement of 26° 18′ 10″, which latter is the assumed ' intended ' angle of slope of the Pyramid passages between the figures for the actual slopes

of different passages. Edgar calls this the course by Mercator sailing. Why the modern invention of Mercator's projection should be used for a land journey is not clear, especially as Edgar also calls this the shortest distance, which it is not,—and a straight line, which it also is not. If he wanted the shortest distance he should have used the Great Circle course, which would have given him quite a different distance and quite a different ' course ', in fact the latter would have changed progressively throughout the trip. If this bearing had not ' hit off ' Bethlehem, one can imagine that it might have met some equally significant site, since that part of the world is full of them. Incidentally Edgar talks of the ' parallel of longitude ' of the city of Bethlehem : it must be the only spot that has one. He also refers, in another place, to the capacity of the King's Chamber being so many Pyramid inches, but gets nearer in the next sentence by calling them ' cubical inches '.

On the subject of Orientation Edgar considers that

> ' no builder could ever orient the sides of a monument with the aid of the magnetic compass ; for the magnetic north is many degrees away from the true north. To accurately lay the four sides of the Great Pyramid due north, south, east and west, as they were originally, necessitated either the knowledge of exact scientific astronomy, or the knowledge that can be communicated by Divine Inspiration '.

For the first, if the ancient builder is meant, then he had no magnetic compass anyway ; if the modern builder—he can surely calculate the variation. For the second, the variation at present in Egypt is very small, certainly not ' many degrees '. For the third point, it was only necessary to know the Pole Star, which the Egyptians did know quite well. We have excavated and surveyed some hundreds of Old Kingdom mastaba tombs at Giza, the majority of which are oriented similarly to the Great Pyramid ; also tombs and buildings elsewhere with the same direction. A Middle Kingdom palace in the Sudan was found to be oriented as exactly north, south, east and west, as any but astronomical instruments could show ; and for accuracy of plan this last had half the error per cent. in its diagonals which the Great Pyramid has in its base sides ! It was the Egyptian practice to orient their tombs and temples thus as a general rule, though the lie of the land and other considerations caused them to modify it in many cases : frequently ' up-river ' or ' down-river ' was used as north and south irrespective of the direction in which the stream lay. The object of interest in all these examples belonging to the Pyramid Age was not the north but the east, towards which the temple or chapel faced.

Construction

Writing of the emplacement for the bridge-slab in the Grand Gallery, Edgar says :—

> ' Some think that originally there was no break in the continuity of the Grand Gallery floor, and that thus the entrance into the Queen's Chamber was concealed. But it is more probable that the gap was constructed in order to give the appearance of having been forced. There are certain features which indicate this '.

There are no such features, and the purpose of the gap is obvious at first glance. He also writes :—

> ' In none of the passages and chambers of the Great Pyramid have we found any of the sculpture-work and carved hieroglyphics which are so common in many of the smaller pyramids . . .'

There is not a single 4th Dynasty pyramid which is inscribed : the idea of the Pyramid Texts did not begin till the 5th Dynasty.

Herodotus actually states that ' on the Pyramid is shown an inscription, in Egyptian characters, how much was expended in radishes, onions and garlic, for the workmen ; which the interpreter, as I well remember, reading the inscription, told me amounted to 1600 talents of silver '. He had obviously been into either the funerary temple of the Pyramid, or more probably into one of the many mastaba chapels. And this is the man quoted as an authority on Egyptian matters by the ignorant ! Herodotus lived longer after the Pyramid Age than we are today after him.

Davidson found material for many pages of theories in an assumption that the ' hollowed in ' core masonry, by which each Pyramid-face of core is ' concave ' to the extent of some three feet in the centre, was repeated in the outer casing. This is known not to be the case. The hollowing-in of the core was most probably a similar measure to the inward sloping bed cut in the rock for the lowest course of casing found in a number of small 4th Dynasty pyramids—intended to give rigidity and stability to the structure. The overlapping of the Grand Gallery courses, the sextuplication of the King's Chamber roof, the massive blocks over the Pyramid entrance, etc., are all examples of the same kind of thing. The same writer, as an engineer, has the following remarks about the plug-blocks :—

> ' Any engineer, architect, or constructional operative knows that it is impossible to slide or push a block of stone, however smoothly dressed and accurately squared, along a passage after the passage has been completely constructed, if the block fits the passage tightly. It is a matter of experience, in such circumstances, that the block will jamb in the passage unless it has at least $\frac{3}{4}$ of an inch of clearance all round '.

It is equally a matter of experience, constructional operatives notwithstanding, that Egypt is full of examples of the Egyptians having done just this very thing.

Edgar states that the sarcophagus must have been put into the King's Chamber before the roof was on, because the entrance to the chamber is too small to admit the sarcophagus. The height of the latter, according to Edgar, is 41.27 inches (max.); and the width 38.72 inches (max.); the height of the entrance passage is 42.5 inches and the width 43 inches, according to Davidson's plans. This is almost as bad as the builders of the tomb of Meresankh, grand-daughter of Khufu, who cut the doorway in the rock wide so as to admit the sarcophagus and then built it in to the normal width with masonry; the joke being that by turning the sarcophagus on its side we removed it through the masonry doorway easily. It was quite usual, on the other hand, for the Egyptians to put in a sarcophagus larger than the doorway before the masonry was closed in, and in the Pyramid they must have done this at least before the Grand Gallery roof was closed, since the sarcophagus could not have negotiated the turn from the descending to the ascending passage.

Davidson says that it is not possible to reach the north–south central plane of the Pyramid except in the King's Chamber, when in fact one can also do so in the rock-cut chamber. On such wild statements are the wilder theories of these writers founded. Davidson also discourses much on the subject of Stonehenge, finding many wonderful things in its measurements; but he states that the area of the circle which is 'precisely internal' to the outer ring of stones is 'exactly' equal to $\frac{1}{4}$ of the ancient Egyptian aroura. The aroura contains from 29555 to 29427 square feet, according to whether one uses the cubit value of 20.63 inches or 20.59 inches; and Davidson gives the Stonehenge area as $\frac{1}{4}$ of 29514.3 square feet. However, when we get the area of the Stonehenge circle from the Office of Works plan in ANTIQUITY we find that it is $\frac{1}{4}$ of 30329.9 square feet, which is not quite the same thing.* The diameter of the Stonehenge circle on the Survey plan is 1179 inches, and according to Davidson's plan 1163 inches, which is not 'exactly' the same.

ARCHAEOLOGICAL

Edgar tells us that Cheops was named Khufu by modern archaeologists. This should read that Khufu was called Cheops by the Greeks,

* See ANTIQUITY, v. I, 39, 42; II, 235; IV, 143, 340.

who knew no better. There is some excuse for confusion in names, since eminent archaeologists still persist in many versions of every ancient Egyptian name (see Reisner's on the 3rd Pyramid in *Mycerinus*). Mykerinos was as near as the ancient Greeks could get to Menkauré, but his name was Menkauré for all that.

Edgar also, after telling us that the Pyramid of Khufu was not intended as a tomb and that Khufu was really buried in what is well known to be a tomb of two or three thousand years later date, writes :—

> ' Cheops . . . therefore, did not intend the Great Pyramid to serve as a tomb ; nor, indeed, if we are to believe the reasonable deductions which are based upon historical accounts, did he or his Egyptian subjects know what purpose this immense edifice was intended to serve ' !

We can picture Khufu and his officials meeting with furrowed brows, and the King saying to them ' What on earth am I building this thing for ' ?

Davidson insists on calling the name of the Pyramid of Khufu ' Khuti '—' The Lights '. The name is ' Khufu Akhet ', meaning ' The (eastern) horizon of Khufu ', the significance of which will be found by referring to the Pyramid Texts. The name might less probably mean ' Khufu is glorious ' or ' The Glory of Khufu ', but in any case the name of Khufu is inseparable from ' Akhet ' in the name of his Pyramid. The 2nd Pyramid was ' Khafre Wer ', ' Great is Khafre ' ; and the 3rd Pyramid similarly ' Menkauré Netery ', ' Menkauré is Divine '.

One thing found continually in works like these (Edgar and Davidson), is that obsolete or unacknowledged authorities are very frequently quoted. Fallacies are thus introduced to the readers, apparently with authoritative backing, but actually with none worth speaking of.

Davidson, for instance, quoting Mr Marsham Adams' ' The Book of the Master ', claims to find references to the Great Pyramid in the Egyptian ' Book of the Dead '. He speaks of the ' final chapter ' referring to the King's Chamber, but if he means chapter 190 or any of those immediately preceding it there is no such reference ; in quoting from this ' final chapter ' he is quoting from chapter 161, in which one finds nothing which by the wildest stretch of the imagination could refer to the Pyramid. Incidentally the oldest versions of these papyri are of the New Kingdom, and the only version of the origins of the ' Book of the Dead ' which can be quoted with regard to the Pyramid are the Pyramid Texts of the 5th Dynasty. The Pyramid

Texts are quoted by Davidson in one place thus :—' Unas standeth up and is Horus ; Unas sitteth down and is Set ', when the text actually has ' Horus says " Stand up, Unas "; Set says " Sit down, Unas "' (Pyr. 473). The authority given by Davidson for this and many other archaeological and philological questions is not one that would be accepted as of much value today.

In the matter of dates, Edgar arrives at 2 B.C. for the birth of Jesus ; while Davidson gives 4 B.C.

Miscellaneous

Edgar writes of the ' shining white ' Pyramid ; and Davidson goes on to work out a marvellous theory that the sun's reflections and shadows from the Pyramid of Khufu were intended to mark the seasons ! This is accompanied by numerous plates and diagrams.

Granted first of all that the Egyptians did not know their own seasons well enough without a heliograph message to tell them when to plough, sow and reap, one is still up against the question of how it was done. The fine white limestone of Turrah, which was used for the Pyramid casing—as for the casings of all the best of the Giza mastaba tombs—does not take a fine enough polish to reflect anything very thrilling. It is only nearly white when freshly quarried, and rapidly tones down to a sand colour when exposed to air and sun. Granite or alabaster would have been much more suitable materials for a mirror. We are given as reasons for this the accuracy of the working and jointing of the casing, the fact that flaws on the stone were ' patched ' carefully with limestone insets, and the Pyramid's name ' The Lights '. The concavity of the casing face is also mentioned in this connexion.

The accuracy of the working is equally good in those parts of the Pyramid which could not reflect the sun—the internal passage-system for instance—and the same accuracy is found in other contemporary tombs, such as the casing of Khufu's 2nd Queen's Pyramid. The ' patching ' of flaws was a usual Egyptian practice and is found in most of the Giza mastaba tombs and pyramids ; the Pyramid's name was not ' the Lights ', as explained above ; the casing-face was not concave, as also previously explained.

There is a good deal in these publications about the Pole Star direction of the Descending Passage, and we have an enlightening statement on the subject in ' What saith the Scripture ' ? by Disciplus —

> ' . . . by the direction in which the entrance passage points to the heavens, as only in this year 2170 B.C. did the Pole Star shine exactly down the passage '.

followed on the next page by :—

> ' Anyone accustomed to use a theodolite for taking angles knows how small an accidental displacement may seriously affect the results. This is particularly the case with measurements respecting the apparent position in the heavens of the Pole Star, its movements being so slight, that a thousand years make no very appreciable difference, and its change in even five centuries is probably not measurable '.

And yet these people arrive at the precise date of 2170 B.C. by the Pole Star alignment, and scorn the archaeologists' date of 3500 to 3000 ! Incidentally the field of view from the bottom of the Descending Passage includes practically *one degree* of the sky, vertically and horizontally.

Davidson writes on freemasonry from his ' technical knowledge of the symbols displayed by the Fraternity ', and professes to find their ' repeated application in the design of the Great Pyramid ' and suspects from this ' that the elements of the Order were formulated at a time when all knowledge of that Truth, subsequently to be enshrined in the structure of the Great Pyramid, had not yet been lost '. We know that two symbols used by the U.S.S.R. today are the hammer and sickle ; we also know that both occur in the hieroglyphics ; but we do not therefore infer that Bolshevism was known in the Pyramid Age. Speaking also from our ' technical knowledge of the symbols displayed ', etc., we can say that where objects used today as symbols are depicted in ancient Egypt, they have nothing but their obvious and operative significance. There is no evidence whatever to the contrary.

Since our personal opinion, unsupported, of the Pyramid mystics may not be worth much, let us see what some others have said.

Petrie, *Seventy Years in Archaeology* :—

> ' The fantastic theories, however, are still poured out, and the theorists still assert that the facts correspond to their requirements. It is useless to state the real truth of the matter, as it has no effect on those who are subject to this type of hallucination. They can but be left with the flat-earth believers and other such people to whom a theory is dearer than a fact '.

In *Ancient Egypt*, part II, 1930, he also writes :—

> ' It need hardly be said to our readers that the extraordinary fallacies and misstatements about the Great Pyramid are lamentable nonsense. The prophetic theories which the writers elaborate are the substitutes for others of the past 60 years, always foretelling a few years ahead, and when disproved by events then shifted to new dates. A prophecy concerning 50 years hence would be safer but not so sensational '.

Borchardt's opinion will be found in that excellent publication of his, 'Gegen die Zahlenmystik an der grossen Pyramide bei Gise' (Berlin, 1922), which contains the clearest refutation of these mathematical delusions.

Budge, *The Mummy* (1925) :—

> 'According to some distinguished thinkers the arrangement of the chambers, the lengths and angles of the inclination of the corridors, etc. represented mysteries the knowledge of which was of the highest importance to the human race, and every measurement had its esoteric meaning and symbolism. The present writer is convinced that the Great Pyramid was built not to serve as an astronomical instrument or as a standard of measurements for the world, but as a *tomb* and as nothing but a tomb'.

He also wrote in *The Nile* (1902) :—

> 'It is well to state at once that the Pyramids were tombs and nothing else. There is no evidence whatever to show that they were built for purposes of astronomical observations, and the theory that the Great Pyramid was built to serve as a standard of measurement is ingenious but worthless'.

Arthur Weigall, *Ancient Egypt* (1928) :—

> 'It may be mentioned in passing that the modern theories attributing prophetic significance to the measurements and arrangements of the inner passages of the Great Pyramid are quite fantastic, and do not receive the support of Egyptologists'.

Reisner, *Mycerinus* (1931) :—

> 'Of quite a different character was the interest excited by the supposed mysteries of the pyramids in the group of writers led by Piazzi Smyth, whose disquisitions have never had any archaeological value and need no further mention'.

Finally, Arthur Mee, who is not an archaeologist, in his *Wonderful Year* has given us about the best statement of the position :—

> '"The People Who Will Believe Anything" :—There are people rich beyond their dreams, but how many people there are who are rich beyond their brains! It is pitiful to think that for every knave there is a fool, that every rogue can find a hundred simpletons to play on' . . .

There is really no particular reason why these mystics should have chosen or limited themselves to the Pyramid of Khufu. Borchardt, in the publication previously referred to, makes them a present of the fact that in the pyramid of Sahure's Queen at Abusir the proportion of half the base perimeter to the height is equal to Napier's logarithmic

base ' e ' (2.71828). We might go further and suggest that if the Crystal Palace were substituted for Khufu's Pyramid an enormous increase in the possible number of measurements would be found, and undoubtedly a great many of them would yield the exact values of a number of things. If a suitable unit of measurement is found—say versts, hanks or cables—an exact equivalent of the distance to Timbuctu is certain to be found in the roof girder work, or in the number of street lamps in Bond Street, the Specific Gravity of mud, or the mean weight of an adult goldfish.

To those who are familiar with Wilde's ' Portrait of Mr W. H.' that tale will present a good parallel to the mentality which has invented and maintained these astounding theories. It has been customary in some circles to dub them ' Pyramid-ites ', but after all ' Smyrniot ' and ' Cypriot ' are used for ' those of Smyrna ' and ' those of Cyprus ', so why not Pyramidiot ?

The World-wide Expansion of Neolithic Culture

by A. Vayson de Pradenne*

Professeur à l'École d'Anthropologie, Paris

A PROBLEM is raised, in the first instance, by the remarkable similarity between certain stone implements, of a somewhat complex type belonging to the neolithic period of Europe, and those found in Asia and still in use in Oceania and America at the time of their discovery. For instance :—the triangular polished axes identical in France, New Guinea and Venezuela ; the flint or obsidian knives, with parallel edges and triangular or trapezoid section, found in France, in the Greek islands and in Mexico ; the mallets and axes with groove (*maillets et haches à rainure*) whose distribution extends from France and Spain to the Andes and North America, passing by Sinai ; barbed and tanged arrow-heads, etc.

The first explanation that occurs is that this is a phenomenon of convergence : in each different region Man has been faced by the same problems and has solved them in the same manner. This simple theory might seem quite tenable. Nevertheless, in view of the number of possible solutions, such identity remains remarkable. Explanations which, taken singly, seem quite admissible, become altogether unacceptable when invoked too often. Thus, as a great mathematician once said, when playing cards to play the king is quite usual ; but he who should play the king ten times running must be a sharper !

Let us then investigate the subject of inter-regional connexions during the neolithic period. Both the period itself and its limits in time are, to tell the truth, imperfectly known. But we do know that

* Translated by the Editor, who wishes to acknowledge his thanks to the author, the Institut Français d'Anthropologie (at whose meeting on 21 February 1934 this paper was read) and to the Editors of *L'Anthropologie*, where it was first printed, 1934, XLIV, 719–23.

it was closely linked with the Bronze Age—so much so that one might wonder whether a pure neolithic period existed at all ; whether there were not just peoples with a common culture and way of living, certain of whom, from lack of raw materials, were almost or quite without metal implements. However this may be, the early part of the Bronze Age appears simply as a continuation of the neolithic, and for the period for which documentary evidence is available certain facts attract our attention. First, the uniformity throughout the Mediterranean-European zone, in spite of local varieties in the flint industry. Then, that retardation observable in the same zone whose western and northern districts always lag several centuries behind the eastern and southern ones.

At a slightly advanced stage in the Bronze Age intercourse between the Asiatic coasts of the Mediterranean and the Far East, through Persia and India, is first plainly observable. Similarly one can trace connexions between China, Siberia and central Europe on the one hand and northern Europe on the other. Granted that we are still without evidence of the true neolithic in these regions, yet the continuity between the two periods may perhaps justify us in interpolating it.

On the other side, the relatively recent settlement of Oceania, from the Indies and Indochina eastwards, becomes more and more certain. (The researches of M. Rivet concerning this point are well known). The resemblances between the neolithic tenon-axes of Japan, so highly specialized in type, and those of the Society Islands, the Marquesas and Alaska (Kadiak Island), in use down to modern times, are evidence of established relations. Axes of the same type, which went out of use in Japan more than two millennia ago, are still to be met with amongst the islanders of the east.

Finally, the connexions between the Eurasiatic and American continents are demonstrated by the existence of a great northern province. The nearness of the different land-regions throughout this zone, the sameness of the environment, the great migratory movements that go with a hunting régime—all combine to produce uniformity in the human population and its material culture.

But the hyperboreans of Asia, like those of America, were in touch with their continental neighbours. Though stranded on the margin of an evolving world, they availed themselves of opportunities to learn certain technical processes. Thus, for instance, an exchange of cultural traits has been observed between the Eskimos and the British Columbian Indians.

That is not all. There are certain curious parallels between China and North America, in the use of stone implements, for instance the stone hoe, a tool whose method of use leaves clear and unmistakable traces behind it. M. Janse has recently recorded, in connexion with a neolithic excavation in Sweden, a type of pottery marked by identity of technique and ornament, and distributed from Scandinavia to North America, passing thither by way of northern Asia. Siren, too, has proved connexions between the ornament on Chinese pots of the Chao epoch and American pots. Andersson has pointed out resemblances in shape and ornament common to both Chinese and Central American pottery (tripod vases with feet bulging out at the top, double spiral ornament, anthropomorphic urns). On the other side, Andersson, according to Jackson, has shown the importance of the discovery of Oceanian cowries in pre-Columbian American graves. Heine-Geldern has called attention to the resemblance between Chinese neolithic oval knives with two holes and examples from Oceania.

New facts, all pointing the same way, are continually turning up. In the interesting New Caledonian exhibition just opened at the Trocadero, there are to be seen polished stone objects of very peculiar shape, of ancient origin and resembling certain specimens from North America and the Antilles (*pics à gorge avec bourrelets*, axes in one piece with the handle). Are these all examples of convergence ? It would be strange if they were.

Doubtless it will be necessary to cast overboard some of the instances cited, but they are so numerous that some must surely remain over. Moreover, the list is not the result of an exhaustive search.

Facts such as these, revealing connexions between peoples distributed over huge areas and in a stage of development corresponding to our neolithic or chalcolithic, suggest that, before drawing any conclusions, we should consider in general terms how humanity achieves its progress and how civilizations develop uniformity.

During the Old Palaeolithic period there is clear evidence of the existence of a huge culture-area, or rather of a region, comprising about half the world. From the Thames to the Cape, from the Atlantic to the Indies, we find the same Chelleo-Acheulean industry, occurring under similar conditions. We have, then, to do with a set of conditions which lasted a very long time, but which taken as a whole may be regarded as having existed contemporaneously in each of the regions concerned. Thus we observe that this very ancient human

stock had a uniform type of industry; indeed apart from that we know little about it.

So too there was quite a remarkable uniformity in the industry of the Middle Palaeolithic. And, in spite of more complications, it does seem that in the Old World there was uniformity in the late (or Upper) Palaeolithic. At the same time, in this stage one notes the disappearance of that lower race which had so wide a dispersion during the preceding epoch.

In general one observes in several cases an industry reduced to uniformity and accompanied or not by the disappearance of lower races.

But today, on the other hand, one finds peoples of very different stages of development, from the neolithic to the machine age. They are strung out along a road five or ten thousand years long. But first one must note that the early undeveloped phases of civilization are less favourable to the establishment of relations between peoples than are some nomad or savage states. Man is tied to the soil he cultivates; he marks out his field and barriers arise on every side. Sometimes these are overcome by commerce and war, but their influence and powers of isolation remain considerable. It is from such a state that we have just emerged. However, the few thousand years which divide us from the neolithic are of but a moment's duration compared with the great preceding epochs of cultural uniformity. Now at length a new process of unification has begun. The birth of the modern world of industrialism has set in motion a world-movement whose results, already partly achieved, will be the universal adoption, in a short time, of the new processes, and the disappearance of the races who cannot adapt themselves thereto. Machinism, while giving a new power to its creators, forces upon them at the same time a need of expansion. They invade the whole world, spreading by force or persuasion that material organization of theirs which they call ' the benefits of civilization '. The laggards have no time to develop; they are carried off breathless into the new world, or are eliminated. A few decades or a few centuries hence the world of humanity will have been levelled out again, except perhaps for a few residual regions.

Let us now look again at what we know of neolithic times. We must first of all throw overboard that far too simple conception of the earlier prehistorians—that the main achievements of the neolithic period consisted in the polishing of stone and the making of pottery. To sharpen the edge of a pebble by rubbing it on sandstone instead of

by knocking off flakes is not to achieve a revolutionary advance ; the best stone workers, in Scandinavia, employed at one and the same time axes of similar shape, the one kind polished, the other chipped. As for pottery, many peoples who know of it prefer less fragile receptacles made of wood or leather.

No ; the neolithic period is characterized by the domestication and breeding of animals on the one hand, and by the selection and cultivation of plants on the other. Thus a stable and assured mode of life took the place of one that was at the mercy of the luck of the chase and of the weather. Thus was animal-power captured and turned to the profit of humanity. That constituted a revolution comparable with the modern capture of natural energy by the use of machines.

On *a priori* grounds alone one might have expected that this revolution should have started a movement analogous to the one in which we are now ourselves involved, something like a tidal wave of world-wide extent submerging everything, annihilating the old world except for a few parts (*lambeaux*) here and there. The dense population of these regions, compared with that of the preceding periods, points in the same direction. The mesolithic has left so few traces that it remained undiscovered for a long time. The caves and sites of the Reindeer Age are as nothing beside the neolithic remains with which Europe is covered. This increase in population would seem to be the index of a considerable power of expansion. Whether this power acts by setting the peoples themselves in motion or whether it sometimes merely spreads the new mode of living, the result in either case is a levelling out of industry.

If such was really the case, all the facts we collect, the close analogies between the implements or arts of distant countries, instead of appearing unusual, will be seen to fall into place and be perfectly explained. It is all related, all is derived from one and the same movement, to an amplitude comparable with that in which we are involved, but one which submerged the Old World and doubtless discovered the New. The greatest difference lies in the rate of propagation which is now of the order of centuries rather than of millennia. The phenomena of world-wide lags—for historically the world appears as having only two limits separated by the Atlantic—are also of the order of millennia ; whilst those we meet with in the proto-history of our little Europe are of the order of centuries. For instance, between the New Guinea people with their polished stone axes and pile-dwellings and our pile-dwellers, there are a few thousand years. Between the

Scandinavians of the end of the Bronze Age and the Mycenaeans there were only a few centuries. That is what might be expected.

To sum up :—the idea which emerges from the facts set out above is that, instead of regarding the polished-stone cultures of contemporary savages and our own neolithic ancestors as comparable—as the convergent outcome of separate lines of evolution, proceeding at unequal rates—one should regard them both as the outcome of a great shock that shook humanity and roughly levelled up the various industrial stages, being succeeded by a phase of isolated advances moving at unequal rates.

Ancient Babylonian Maps and Plans

by Eckhard Unger

1. Assyriology is fortunate enough to possess, in Babylonian and especially in Assyrian royal inscriptions, architectural descriptions often quite detailed in nature. A case in point is the full account of the reconstruction of the Temple of Assur in the city of that name undertaken by Sennacherib toward 700 B.C., when he rebuilt several of its gates. These ' new gateways of the Temple of Assur ' figure again in a well-preserved ' Description of the city of Assur '. Together, then, with the account of Sennacherib's rebuilding, a contemporaneous description of Assur, giving in catalogue form, in 183 lines, the main features of the ancient city, has also come down to us. And I have succeeded in piecing together a number of fragments which together supply 268 lines of a ' Description of Babylon ' of a similar nature.[1] Apart from descriptions of buildings and cities we also possess cartographic remains depicting the earth, landscape, fields and buildings projected as seen from above. These ground-plans,[2] which form a very welcome corroboration of the written texts, are chiefly found on clay tablets—the usual stationery of Mesopotamia. Generally amplified by text, they deserve special attention, for they supply valuable material for the study, not only of ancient topography and buildings but also of early ideas of how man orientated himself in his world.[3]

The earliest ground-plans appear on cuneiform tablets (FIGS. 1–2) bearing deeds of sale of property, of which the definition of shape and

[1] Unger, ' Das Stadtbild von Assur ' : *Altaer Orient*, 27 (1929) ; *id.*,' Assur (city) ' : *Reallex. der Assyriologie* I, p. 182, § 37, b, 4 ; Schroeder, *Keilschrifttexte aus Assur hist. Inhalts*, II, no. 124 ; Unger, *Babylon nach der Beschreibung der Babylonier*, 1931, Document no. 1 ; *id.*, ' Babylon ' : *Reallex. d. Assyr.*, I, pp. 330 ff. ; *id.*, ' Topographie der Stadt Dilbat ' : *Archiv Orientální* III (1931), p. 46 f.

[2] Summary : Unger, ' Tabula ', in Ebert, *Reallex. der Vorgeschichte* ; also, E. D. van Buren, *Clay Figurines of Babylonia and Assyria*. Yale Oriental Series, XVI, p. LXI, 273–6 (16 maps, nos. 1309–24) ; and Meissner, ' Babylonische . . . Landkarten ' : *Klio* 19 (1924), p. 97 f.

[3] I hope soon to publish, under the title *Welt und Mensch im Alten Orient*, a work on archaic conceptions and on the development of ideas in early eastern culture.

location was a practical necessity. They occur on some Fara tablets, but the drawing on these is of course very primitive. Paucity of material prevents us from tracing in detail the history of Babylonian cartography,

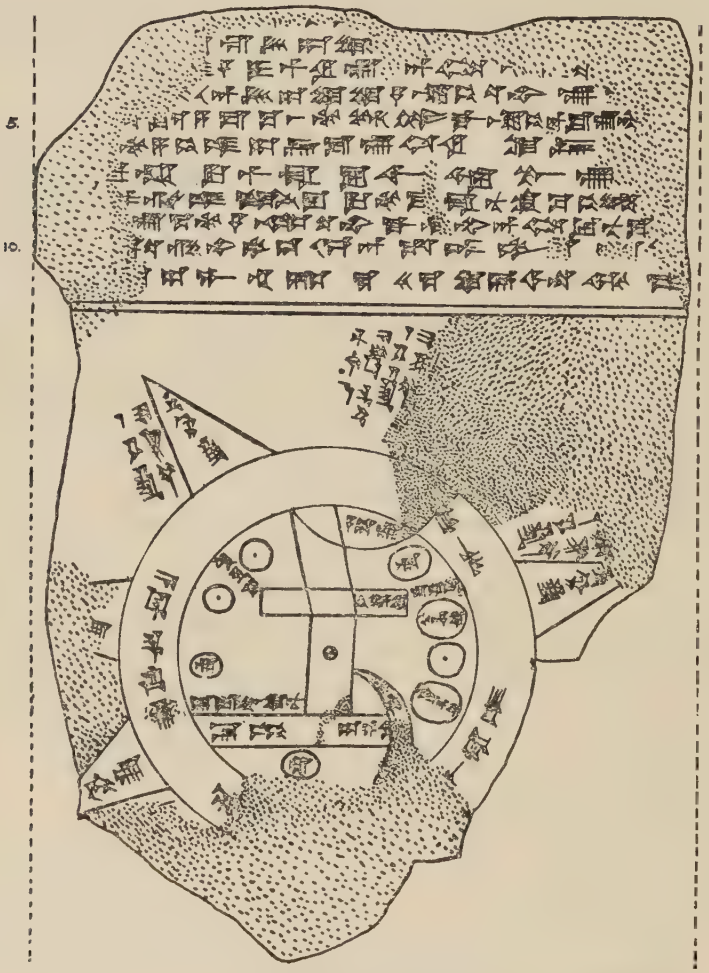


FIG. 1. MAP OF THE WORLD, AFTER A DESIGN ON A CUNEIFORM TABLET (*See* FIG. 2)

By permission of the British Museum

but so far as we can yet tell methods have not greatly changed. Objects —in this case the ground-plans—were projected as seen from above by means of straight strokes. Just as in the very early cuneiform curved lines are very rare, so in these ground-plans too they are usually avoided,

FIG. 2. MAP OF THE WORLD ON A CUNEIFORM TABLET, BRITISH MUSEUM
('Cuneiform Texts', XXII, plate 48)
By permission of the British Museum

facing p. 312

for the clay permitted the scratching of angular forms but was too stiff for curved ones. This explains why rivers and canals are seldom represented by winding curves but nearly always by angular forms. Sometimes, however, canals, indicated by two parallel lines, were filled in by wavy ones (FIG. 6), an expressive way of rendering water [a convention still used by cartographers and called ' water-lining '] ; but usually the space was left blank and the name of the canal inserted, the

FIG. 3. RECONSTRUCTION (BY UNGER) OF BABYLONIAN MAP OF THE WORLD
From ' Atlantis ' (Berlin) April 1932

addition of the designation ' canal ' removing all ambiguity. Ground-plans of houses were executed on a system still used today : the various thicknesses of wall were indicated and the doors marked by openings. If the draughtsman made a mistake he would, say at a place originally marked as a door, put a diagonal cross—×—to show that the opening was ' invalid ', ' non-existent ', ' crossed out ', just as was done for cancelled clay tablets or ' unsafe ' squares on gaming-boards.[4] This

[4] Unger, ' Spiel ' : *Reallex. der Vorgeschichte* ; Clay tablet in Berlin (VAT 8738) ; *id. Babylonisches Schrifttum*, 1921, fig. 10 ; Ground-plan in Berlin : Borchardt, *Sitz. K. Preuss. Akad.* 1888, pl. 1 ; Meissner, *Babylonien und Assyrien* I, fig. 154.

may even have indicated an alteration made in the course of construction, the plan having served for the original lay-out.

2. The only example of a Babylonian world-map hitherto found dates from the Persian period and is probably part of a comprehensive description of the world. According to the text on the tablet we have here a chart of the 'Seven Islands' or regions supposed to lie between the 'Earthly Ocean'—called the 'Bitter River'—and the 'Heavenly Ocean'. A description of the latter, with its zodiacal signs, even comes into the text. Yet the round earth, with Babylon as its centre, the 'hub of the universe', is just roughly sketched in, being only required, apparently, to make clear the position of the 'Seven Islands'. The ideas connected with these islands are reproduced in the reconstruction in FIG. 3. The fifth region bears the significant note: 'Where the sun is not seen'; it lies in the north, therefore, and the Babylonians knew of the Polar night. In the fourth region 'semi-obscurity reigns', in the sixth dwells a 'hostile horned bull', in the seventh the sun rises.[5] For a long time this cosmos was the accepted idea of the world, but every nation saw it with a different centre—itself, placed, as the case might be, in Jerusalem, Egyptian Thebes or Greece, and naturally the arrangement within the cosmos varied accordingly. That an astrolabe of the 17th century of our own era displays a similar 'horned bull', on a similar triangular field, similarly placed, bears witness to the tenacity of tradition.[6]

3. District maps, mostly from Nippur, showing fields, canals and places, have also come down to us. One of these, of which a considerable portion is preserved, is a local map of part of the Nippur area, probably of the Kassite period (1300 B.C.),[7] and shows a canal and the town of Hamri, as well as Kâr-Nusku and several other places. We possess a similar but very fragmentary map of the Lagash [Tello] district dating right back to Akkadian times (2700 B.C.). Mention must also be made of the city of Sippar shown upon a district map in which the Euphrates and the Tabbishtum canal appear by name. Possibly this is the Sippar of Shamash, the Sun-god, the ruins of which were uncovered at Abû Habba.[8]

[5] Unger: *Babylon*, figs. 3 and 4, document no. 6, p. 254 ff.; *id.*, '*Rekonstruktion des Kosmos*': *Atlantis*, 1929, p. 701; 1932, p. 246 f.

[6] E. G. Happel, tomi III, Andrer Teil grössester Denkwürdigkeiten der Welt. Hamburg, Thomas von Wiering, 1685. The reconstruction has been based on this.

[7] In Philadelphia; Langdon, *Museum J.*, 7 (1916), p. 263 ff.

[8] Lagash: Thureau-Dangin, *Recueil de Textes Cunéif.* no. 154. Sippar: *Cun. Texts*, XXII, 49 (B.M. no. 50644); Meissner, *op. cit.* II, p. 378.

FIG. 4. CLAY TABLET WITH PLAN OF NIPPUR
From 'Excavations at Nippur', by Clarence S. Fisher. Philadelphia, 1905

facing p. 315

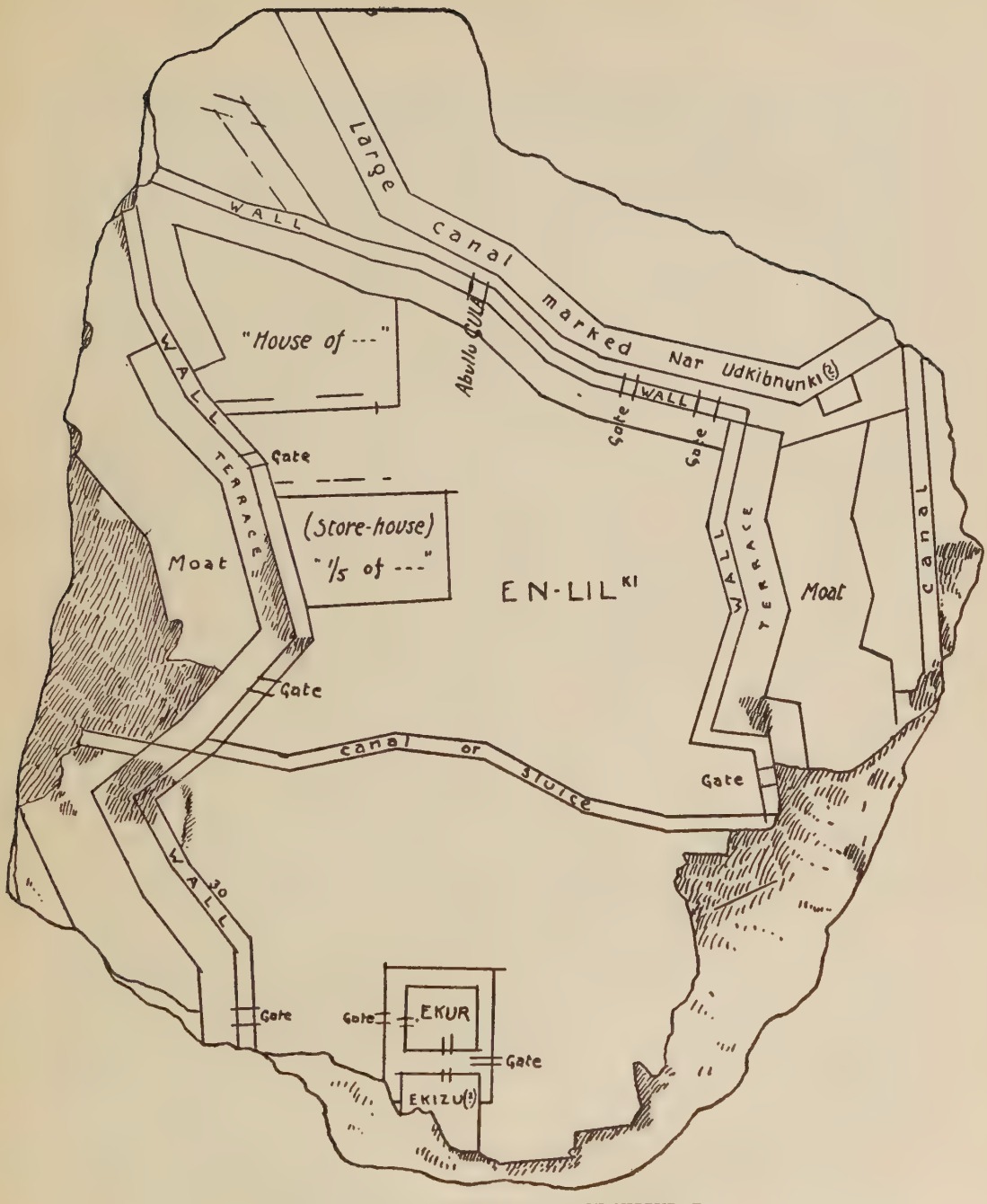


FIG. 5. DIAGRAM TO EXPLAIN PLAN OF NIPPUR, FIG. 4

4. A number of fragments of town-plans have survived. Of these the most extensive is one of Nippur, which excavators claim to represent part of the city (FIGS. 4–5). I have identified two portions of the town-plan of Babylon, one showing the [Southern] Citadel, the other the Shamash gate and the suburb Tuba of the ' new city ' of Babylon situated west of the Euphrates (FIG. 6). This plan of the ' new city ', by the way, agrees absolutely with the ' Description of Babylon ' mentioned above.[9] At the Citadel, which apparently represents a very early building, are the Arakhtu canal—a sacred name for that part of the Euphrates flowing within Babylon—and the ' King's moat ' or Citadel-moat, traced along the Libil-hegalla canal. The inscribed measurements too seem right for the Citadel, which did not change much until the time of Nabopolassar. But Nebuchadnezzar II (600 B.C.) added outside, north of the city, two new citadels which we know did not exist before his time. On a town-plan of Assur appears an unidentified city on the Euphrates ; King has found part of Sippar-Jahrurum on a clay tablet ; and a fragment dating from Neo-Babylonian times and showing a ' Temple of Enlil ' and a ' beginning of a street ' may represent part of the city of Babylon, but this is not certain.[10]

5. Estate- or field-plans are remarkably numerous, even from the Akkadian to the Late Sumerian period (2700 B.C. downward), and are mostly found on clay tablets. In the post-Kassite period (12th century B.C.) such plans are sometimes found on the boundary-stones (*kudurru*). The individual measurements and indications of direction noted thereon afford a considerable guide to Babylonian methods of orientation.[11]

6. Ground-plans of houses probably figure among the oldest cartographical remains. They are chiefly of private houses but occasionally of temples. The plan of the Ningirsu temple at Lagash, drawn on a brick held in the lap of the seated diorite statue of Gudea (2600 B.C.), is particularly original. It shows only the outer walls of the temple complex, the two towers over each gateway being very prominently

---

[9] Nippur : King, *Sumer and Akkad*, p. 87 ; Van Buren, *op. cit.* fig. 316. Babylon : Unger, *Babylon*, Document no. 4 (' new city '), no. 5 (citadel), p. 253.

[10] Maps of Assur : Schroeder, *Keilschrifttexte aus Assur* no. 25 (Berlin, VAT 9423). Sippar-Jahrurum : King, *Letters of Hammurabi* pl. 242, no. 107, and vol. III, p. 255 ; Langdon, *Amer. J. Sem. Lang.* 39 (1922), p. 206 ; Enlil Temple tablet in London : B.M. no. 73319 : *Cun. Texts*, XXII, 49.

[11] Thureau-Dangin, *op. cit.* nos. 149–60, etc. ; *Cun. Texts*, I, X (*passim*). Boundary Stones : Steinmetzer, *Kudurru*, nos. 13, 15, 26, 79 ; King, *Babylonian Boundary-stones*, nos. 13, 15, 26.

projected and looking as if they were perpendicular to the temple walls.[12] On a couple of fragments of a tablet in London is the ground-plan of a building drawn in such detail that the brickwork is marked out and the measurements shown in ells and inches.[13] An interesting clay tablet from Babylon in Berlin bears a sketch-plan recording the results of the measurement of a house-plot near the Zababa gate ;[14] probably this

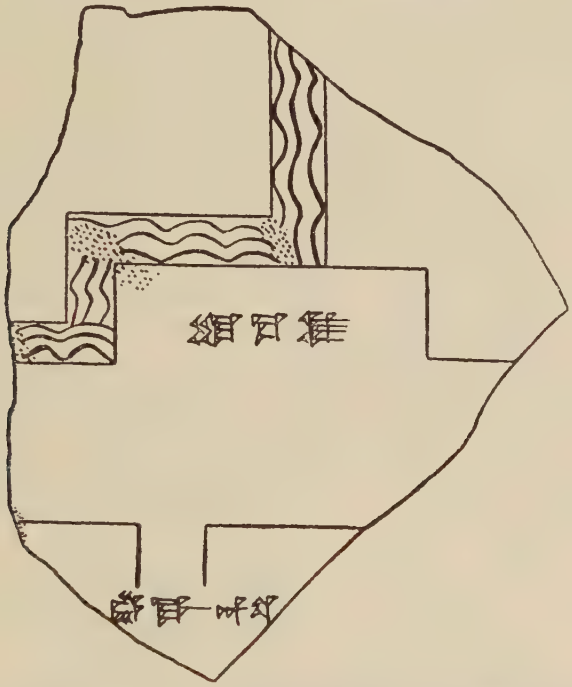


FIG. 6. FRAGMENT OF A MAP OF BABYLON ('NEW TOWN'), AFTER UNGER
The plan is drawn with the southeast at the top. The water-lined band is the Euphrates; in the middle is the place Tuba ; all below it is called Samas-Tor

tablet was appended as an illustration to a deed of sale. I have already drawn attention (cf. § 4) to another big house in Babylon complete with measurements and with a diagonal × marking a ' non-existent ' door.

7. Mention has been made above (cf. § 4) of plans of city walls. Properly speaking they count as town-plans. It is not impossible, however, that they are concerned only with the representation of city

[12] Sarzec and Heuzey, *Découvertes en Chaldée*, pl. 15, 1 (statue B).

[13] *Cun. Texts*, XXII, 50, p. 13.

[14] VAT 68 : *Vorderasiatische Schriftdenkmäler*, VI, no. 264.

walls. A map of this nature, from Lagash, dating from late Sumerian times (2400 B.C.) has been preserved.[15]

8. The sketch-maps of camps on the Assyrian reliefs also come within cartography. They are first found, so far as we know, in the 9th century B.C., that is to say, on the reliefs of Ašurnasir-pal (880 B.C.). His successors emulated this style of plan. The camps are drawn as seen from above, and the towers are seen from within and projected from the camp outward. For similar treatment of the gate-towers in the temple plan of the Gudea statue, cf. above, § 6. The camps were always laid out on an identical plan, conforming to a military pattern and without individuality. The only difference found is that they are sometimes shown square, sometimes round, sometimes oval.[16]

9. These maps and plans all had a definite orientation. Examination of the world-map, for instance (§ 2), shows, especially by the ' dark ' fifth region in the north, that in Babylonian orientation the northwest was at the top. The fragmentary town-plan of Nippur (cf. § 4) shows such orientation. In ordinary reproductions this clay tablet was formerly incorrectly placed. The orientation may be judged by the position of the name ' Nippur ' in the centre of the map, which in King's reproduction is correctly placed. Now compare it with Fisher's reconstruction embodying the part shown on the fragment, and it is clear that the plan followed a system of orientation having the northwest at the top. The north arrow on the last-named reconstruction shows the exact orientation. The ground-plans of Babylon too must follow a similar—to our modern idea—inclined or oblique orientation, but either the key-word, such as we have in the map of Nippur, is lacking, or else these plans are not so well preserved as the world-map, for instance, the position of which on the clay tablet is absolutely certain. At any rate its inclined orientation is certain, though it cannot be definitely stated whether such orientation was due northwest.

If the maps be examined in detail it will be seen that the draughtsman, when he had drawn in the rectangular ground-plan of his building, would sometimes approach the plan from outside and add from each edge his notes of measurements, names and direction. Thus when noting the direction the draughtsman was looking, not towards the particular line of orientation but along, *i.e.* in the same direction as it. For the rest, he assumed four different view-points, approaching each

[15] Thureau-Dangin, *op. cit.* no. 147.

[16] Unger, ' Feldlager ', in *Reallex. der Vorgeschichte* III, p. 202 f., pls. 42–43.

side and writing along it. Clearly, it would be impossible definitely to ascertain the absolute orientation followed unless, as in the two cases under discussion, another important and decisive factor were present. The pre-requisites, then, are either a well-preserved tablet and the possibility of determining the orientation by the position of its text, or

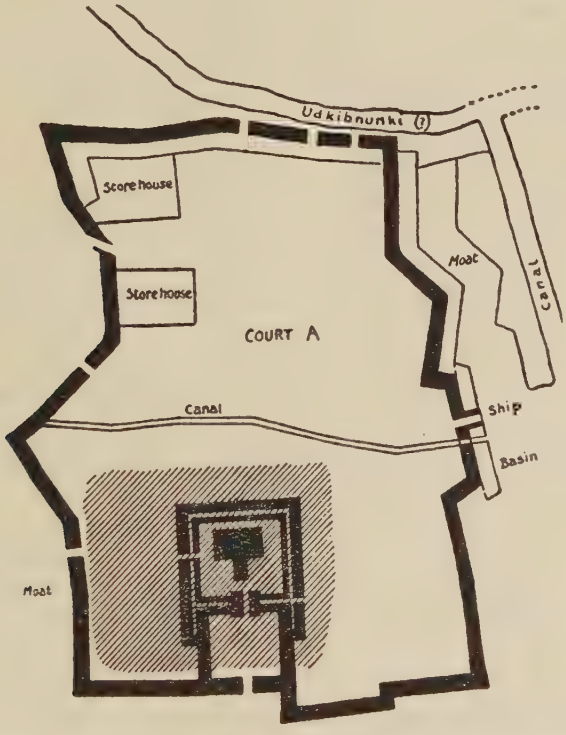


FIG. 7. PLAN OF NIPPUR, AFTER EXCAVATION. AFTER FISHER
Compare with figs. 4 and 5

else the presence of the key-word to the map ('Nippur') together with one of the four independent side-orientations.

10. These two examples (cf. § 9) permit the unprejudiced conclusion that the Babylonian system of orientation was inclined, *i.e.* had the northwest at the top, and did not follow the perpendicular plan—north, west, south and east—of our cardinal points. Four years ago I was able to produce evidence to show that the Sumerians originally based their system of orientation on the direction of the prevalent

winds in Mesopotamia. Meteorological observations conducted over the past 150 years have established these winds as approximately NW, NE, SE and SW. The Sumerians determined the individual character of these four prevalent winds and interpreted them as manifestations of gods of like nature. The manifestation of deities through the direction of the wind played an important part in the orientation of the respective temples set up to them.[17] The fact must be emphasized that the winds in question do not blow from one fixed point but rather from some point approximately comprised within the arc of the relevant quadrant, as my windrose in the town-plans shows.[18] Orientation followed, therefore, not one definite line but a direction contained within the arc of a quadrant.

The northwest wind, the so-called ' favourable wind ', was the manifestation of beneficent gods—of Ishtar [at Uruk], the goddess of love, for instance ; while the southwest wind, the ' storm-wind ', which brought sickness and disaster from the desert, was the wind of the demons of illness and of the gods of war. The southeast wind, the ' cloud-wind ', which blew from the sea, was dedicated to the gods dwelling in the sea, in the underworld, with which they had connexions. The northeast wind was known as the ' mountain wind ', and had no special associations. But in the northeast the sun rose at the time of the summer solstice (our 21 June). This, therefore, was the time selected for determining the orientation of the city of Babylon. The northwest walls, and the main street of the city's god, of Marduk, the god of the ' sun of day ', which ran parallel to these walls, were oriented toward this point in the sun's course. Thus was obtained an astronomical time-gauge, occurring once a year, when the sun shone straight down the street, and providing the basis for calculating the normal lunar calendar and adjusting the solar year by means of an intercalary month. In the neighbouring city of Borsippa the procession street was likewise oriented astronomically by the appropriate phases of the moon.[19] So a system of orientation by the stars as well as by the winds was employed. This system was an inclined one too and never followed that of our cardinal points, which shows that although astronomical

---

[17] Unger, in *Forschungen und Fortschritte*, IV (1928) p. 343 f., V, (1929), p. 270 f. *Babylon*, p. 122–135 ; see also footnote 3 above, where this matter is further discussed.

[18] Unger, *Babylon*, fig. 27, pl. 18.

[19] Unger, in *Atlantis*, 1932, p. 244 f. ; *id.*, *Babylon*, p. 382 ; Borsippa : *id.*, ' Barsippa ', *Reallex. der Assyr.* I, p. 418, § 57.

considerations were taken into account, the tradition whereby a particular deity was manifested through the wind held first place. In all available material hitherto studied the orientation of the temples and the character of the gods to whom they were dedicated—at any rate in Babylonia—correspond with the direction and nature of particular winds. Theoretically, orientation was and remained fixed within the arc of a quadrant. Whether in practice, however, a temple could be oriented on the day of its foundation according to the ' officially fixed ' direction of the wind—which might at the time be variable—may be doubted. The theory, then, that the Babylonians actually based their system of orientation on certain stars, is, as I shall attempt to prove on other grounds, quite a plausible one. These stars shone fairly regularly on certain days within the wind-quadrants definitely fixed by tradition. If this assumption is correct, then the wind-quadrants were fixed on certain general lines, and in practice orientation would be based, not on the actual direction of the wind—since it might be variable—but on observation of the stars, assuming, of course, that they appeared within the limits of a given quadrant. The orientation, in theory, of our churches to the East, not to Jerusalem, and, in practice, of mosques to Mecca, illustrates this point.

The terms ' sunrise ' and ' sunset ' in Mesopotamia imply a similar orientation by quadrant. These terms did not denote the direct easterly or westerly cardinal points as we understand them, but the complete quadrants within which the sun rose and set. Thus Mount Bikni, where lapis-lazuli came from, and which has been identified with Mount Demavend in the northeast of Assyria, was called the ' mountain of the rising sun '. But the Persian Gulf, situated in the southeast of Babylonia, was similarly named the ' sea of the rising sun '. So when King Sennacherib, in 700 B.C., spoke of the two walls of Nineveh—the one orientated to the ' mountain-wind ' (NE), the other to the ' cloud-wind (SE),—as ' turned to the rising sun ', he was being quite consistent. This also goes definitely to prove that while the ' mountain-wind ' and the ' cloud-wind ' blew from the NE and SE quadrants respectively, they must not be equated with exact east or south. But when it was a question of defining an astronomical direction, the Babylonians, owing to the need for greater precision, may quite well have departed slightly from traditional practice. All that this would mean, however, is, that while a quadrant is still indicated, the ' mountain-wind ' (NE) includes the due east wind, the ' cloud-wind ' (SE) the south wind, the ' storm-wind ' (SW) the west wind, and the ' favourable

wind' (NW) the north wind.[20] We must await proof from astronomical texts as to when this method commenced. From cuneiform texts of the Greek Diadochi period (3rd century B.C.) we learn that the term 'sunrise' was employed for the 'mountain-wind' (NE), and 'sunset' for the 'storm-wind' (SW). This already reveals a certain narrowing of the earlier conceptions of 'sunrise' and 'sunset'.

Excavations have repeatedly proved the inclined orientation of buildings. Further, inscriptions on dedication tablets show that the inclined orientation was intended to correspond with the direction of the wind. In studying Babylonian maps and plans it is of vital importance to know that they are thus obliquely oriented just as the noteworthy buildings were. Only, however, by studying together both the actual buildings excavated, and the texts, can ancient Babylonian plans be fully understood.

[20] The above quadrants may quite well be used to indicate astronomical direction. The quadrants to N, E, S, and W, postulated by Neugebauer and Weidner (*Archiv. f. Orientforsch.* VII, p. 269 f.) are diametrically opposed to the evidence of the buildings by which I have gone but which both these writers simply ignore. Their objection to my alleged equation of the NE direction with 45°, and the SE with 135°, and so on, does not trouble me, as I never assumed these to be exact points but only points within an arc, as my Babylon, Borsippa, etc., windroses show (cf. note 18).

The Poems of Llywarch the Aged*

by Kenneth Jackson

MANY readers of Antiquity know Skene's translations of the early Welsh poems from what he called the 'four ancient books of Wales',[1] but not so many, perhaps, realize that though his work was a considerable piece of scholarship in his day his renderings are now quite out of date and nowhere to be trusted by the layman. Among these poems are a number of great interest and importance for the study of the Dark Ages in Britain, treating the westward expansion of the English from the Welsh point of view ; and Celtic scholars could be of great assistance to the archaeologist and historian by editing and translating them afresh in the light of modern knowledge. A beginning, a preliminary clearing of the ground, was made by Sir John Morris Jones in his study of Taliessin[2]. Now Professor Ifor Williams, with his profound knowledge of early Welsh language and literature, has settled the problems of the cycle attributed to Llywarch Hên in a way not likely to be revised for a long time. As the book is written in Welsh a rather full summary is called for.

Canu Llywarch Hên ('the poems of Llywarch the Aged') comprises Williams' edition from all known manuscripts of every early poem attributed to or connected with Llywarch, with a very complete commentary on the linguistic and textual difficulties ; and an introduction dealing more fully with the historical aspects already briefly discussed in his 'Poems of Llywarch Hên'[3]. Up to the present these poems have been very largely unintelligible, partly for their linguistic obscurity but still more because their scheme of arrangement was not understood. Professor Williams has brought order into this chaos by a theory which is perhaps the most brilliant aspect of the whole book. As the poems

* *Canu Llywarch Hên.* By Ifor Williams. pp. xcii, 266. Cardiff : University of Wales Press, 1935. 10*s* 6*d*.

[1] W. F. Skene, *The Four Ancient Books of Wales.* Edinburgh, 1868.

[2] *Y Cymmrodor*, vol. 28.

[3] *Proc. Brit. Acad.*, vol. 18, Rhys Lecture for 1932.

appear in the Red Book of Hergest, the earliest extant manuscript, they cover about 12½ columns (1034–1042, 1044–1049), divided by large capital headings into five separate poems.[4] Williams shows—and this is indeed obvious, though no one appears to have noticed it before—that there are really considerably more than five, but that with these exceptions they have all been run together without any indication where one poem ends and the next begins. Thus the first 21 verses of the poem beginning on col. 1036[5] are a monologue by Llywarch lamenting his old age ; the next 13 are a dialogue between his son Gwen, himself, and his wife ; and the next 14 are an elegy by Llywarch on the dead Gwen ; yet there is nothing in the set-out of the manuscript to show that this is so—to tell for example that Gwen was alive in the second section and dead in the third, or how he had come by his death. Williams accounts for this, and in doing so solves the whole tangled problem, by his theory that these are the verse-portions of a story which was told originally in verse and prose ; and that since the story-teller had to remember the verses accurately for metric reasons, they alone were written down, while the prose parts were left unwritten because it was easy to remember their drift and unnecessary to repeat them each time in precisely the same form. This kind of mingled verse and prose tale is very rare in Welsh literature, but Williams is able to quote a satisfactory and conclusive parallel. The type is of course a regular one in Irish. On this basis he reconstructs the whole tale, relying as much as possible on the internal information of the poems and as little as possible on conjecture.

Professor Williams shows that the poems belong to two independent cycles : the story of Llywarch Hên and the quite unconnected traditions about Cynddylan and the other descendants of Cyndrwyn. Llywarch appears in the early genealogies as first cousin of Urien, the prince of the northern Britons, who is known from Nennius to have lived in the late 6th century and to have opposed Theodric and the invading English settlers in Northumbria.[6] Williams re-affirms the general trustworthiness of these genealogies and disposes (let us hope for good) of the unfortunate theories that they, along with much else of our sources for early Welsh history, are forgeries of a later date. The poems in question illustrate this genealogical evidence and do not conflict with it in any way ; and they contain practically all the other early information about Llywarch which we have. He appears first as

[4] Skene, 1, 326, 355, 448, 580, 584. [5] Skene, 1, 326. [6] ed. Mommsen, p. 206.

the speaker, not named but clearly intended, of an elegy or elegies on his cousin Urien of Rheged. We hear of a faction between Dunawd[7], Gwallawg (Guallauc in Nennius), a certain Bran, and Morgant (Morcant the betrayer of Urien in Nennius), against Urien's sons ; and learn that Urien has been killed at Aber Lleu,[8] presumably as a consequence ; that his home lies in ruin and the greatness of Rheged is no more. In the other poems Llywarch has become characteristically the Old Man. One[9] appears to contain a dialogue where someone objects to going to battle because it is too cold, with fine descriptions of wintry weather, leading up to a dialogue between a son of Llywarch and a dependant of Owein son of Urien who is acting as his guide ; and ending, presumably after a lost prose-link, with an elegy by Llywarch on this son killed by a certain Mwng Mawr-Drefydd. Others are advice to his son Maen,[10] a random collection of verses about his sons,[11] and similar verses from late MSS. not given by Skene (one with an explanatory passage of prose exactly of the kind postulated by Williams for the whole poetic cycle). One poem[12] introduces us to Gwen, the last of the 24 sons, who has returned from a long absence and now declares his intention of guarding the ford of Morlas (? near Oswestry) against the English ; followed by Llywarch's elegy telling how Gwen ' watched last night by the ford of Morlas ' and was killed. An elegy on another son, Pyll, some scattered stanzas on the graves of the sons, and four verses about three of them, Talan, Dwg, and Cyny, are added at the end. Another[13] is Llywarch's famous elegy on his own old age, expressed with extraordinary tragic power and restraint. The poem probably last in order (not in Skene) shows the aged Llywarch an exile in Wales ; he meets a horseman who warns him against his old enemies Dunawd and Bran, reminds him that Urien's sons are all dead, and invites him to take refuge at Llanfor near Bala in Merioneth. It is not explained how it is that Llywarch and his sons, whose original connexions were with Rheged on the Scotch border, came to be settled in mid-Wales, and Williams does not attempt to account for it. The poem about the cuckoo of Aber Cuawg,[14] has nothing to do with Llywarch and belongs to some different story now unknown.

The orthography and scribal errors in the MSS. show that the earliest traceable exemplar must have been written in Hiberno-Saxon

[7] d. 596, *Ann. Camb.*

[8] cf. Ross *Low* opposite Lindisfarne, Nennius' *insula Metcaud.*

[9] Skene, I, 321. [10] Skene, I, 584. [11] Skene, I, 319.

[12] Skene, I, 326, vv. 21 ff. [13] Skene, I, 326 vv. 1–20. [14] Skene, I, 580.

script and Old Welsh spelling some time before the Norman Conquest. Linguistic considerations suggest that it was much before, and the occurrence of three verses in precisely the same metre, language and style as the Llywarch poetry, in a 9th century MS., points to the existence of this body of verse as early as that date. For linguistic and other reasons it is hardly likely to be earlier. That is, the poems were probably composed soon after Nennius' *Historia Britonum*. It will appear that they drew to some extent on the same group of tradition, a tradition preserved independently by the genealogies and the *Annales Cambriae*.

The second cycle, that of Cynddylan and his family, is comprised in the long series of englynion in Skene (I, 448 ff), and takes the form of a dramatic monologue spoken by Cynddylan's sister Heledd. Cynddylan, son of Cyndrwyn and king of Powys, has been killed by the English and his town and palace have been laid waste. Heledd laments his death and that of her other brothers, describes the ruined hall and the eagles feeding upon the dead, envies her sister Ffreuer who has escaped her misery in death, and so comes to her own plight as a destitute wanderer herding goats in the mountains. The poem includes the well-known stanzas on the ' Hall of Cynddylan ' and on Tren, ' the white town in the bosom of the wood ', where the sense of tragedy heightened by restraint appears at its finest ; and many lines such as, ' long is the sun's course, longer are my memories ', (v. 80. II), illustrate well the early Welsh faculty for dramatic contrast and verbal economy. It used to be thought that this poem referred to the western campaign of Ceawlin in A.D. 577 ; Cynddylan was identified with the *Condidan* whom he killed ;[15] and a passage in the poem supposed to refer to Uriconium was taken to show that this was the occasion of the English advance into that part of Britain. But Professor Williams has discovered a verse in a late MS. which states definitely that Cynddylan was an ally at the battle of Maserfield in A.D. 642, and an early poem on him called ' the Elegy of Cynddylan ' which mentions his brothers as fighting before Lichfield. This points rather to the period of the struggle between Northumbria and Mercia when the Welsh under Cadwallon were the allies of Penda. In any case the actual poems are almost certainly later than Cynddylan's time, and appear to date, like the Llywarch cycle, in the middle of the 9th century. Analysis of the place-names, so far as they can be identified with certainty at all, suggests that they belong to two distinct areas. The first seems to be the

[15] *Comail*, p. XXXIII, is presumably a misprint ; the MSS of the Anglo-Saxon Chronicle give *Coinmagil*, *Coinmail*, and *Coinmael*.

Shrewsbury district ; Cynddylan's court is probably at Shrewsbury ; the rivers Tern and Roden, which flow into the Severn just below Uriconium, are mentioned, and Cynddylan's 'white town', Tren, has the same name as the river. The Wrekin is apparently referred to, and Cynddylan seems to have been buried at Baschurch. The second area is well inside the border, in the present Montgomeryshire and Merioneth-Denbigh. The poet must have been very familiar with it. Williams thinks (pp. xc–xci) that the place-names belong to the geography of the 9th century, when Wales was confined to very much its present boundary and Mathrafal in the middle of our second district was the capital of southern Powys. But the first district was far outside Wales long before the 9th century, and in fact must have been absorbed into England soon after Cynddylan's time ; and we might suggest that the poem preserves two strata of the tradition, the first belonging to Cynddylan's period when he was known to have ruled from the Shrewsbury country, and the second dating from much later times when Powys had retreated twenty miles further west and its earlier extent was partly forgotten.

On the whole, Professor Williams carefully avoids either too much emendation or too little. Many linguistic difficulties are still unsolved (as he would be the first to admit, for unlike Skene he does not pretend to understand everything), and most of them will probably never be solved at all ; but in an edition of such extremely obscure poems there is bound to be much that is conjectural, and no doubt there are certain things which he will be inclined to reconsider later. Except for such details the text of this large and extremely important body of early Welsh literature has been established once for all. In making all these poems intelligible and in proving their authenticity Professor Williams has done a very great service to Celtic studies and British history. Now that this is completed we expect from him his long-awaited edition of the Gododdin poems, which though less informative are in some ways even more important historically than the present texts. May we suggest then when this book appears it should be published in English with a translation of the text, so that the many non-Welsh speaking historians, archaeologists, and scholars in England and abroad may be able to understand and appreciate it ?

The Römisch-germanische Kommission

by P. K. Baillie Reynolds

Inspector of Ancient Monuments for England

IT was nearly six years ago, in December 1929, that the Römisch-germanische Kommission of the Deutsches Archäologisches Institut celebrated its silver Jubilee. On that occasion Dr Eduard Meyer, in his opening address, reviewed the scope of the Commission's activities during the 25 years of its existence. The address, which is printed in the commemorative volume issued to mark the occasion,[1] laid some emphasis on the fact that the Commission's energies and achievements are not confined to the Roman period, but stretch beyond it in both directions, forward at least to Carolingian times, and backward into Prehistory. This wide extent of the Commission's interests is probably imperfectly understood by many students of antiquity in this country—if indeed there is not a tendency to confuse the Römisch-germanische Kommission with the Limeskomission—but it is by no means a new development. In fact it may be said that the ' Römisch ' part of the title is an accident, for, as originally planned, the Commission was to be a body charged with the direction of all excavation in Germany, whether of prehistoric, Roman or post-Roman sites, and was intended to stand on an equal footing with the German Institutes in Rome and Athens. That it did not develop according to plan was due to ' zufällige persönliche Konstellationen '.[2]

In a pamphlet published in 1934 Dr Carl Schuchhardt, one of the few surviving original members of 1902, gives a brief account of the origin and development of the Commission which he helped to found.[3]

[1] *Fünfundzwanzig Jahre Römisch-Germanische Kommission.* Walter de Gruyter and Co., Berlin and Leipzig. 1930.

[2] Gerhart Rodenwalt. *Archaeologisches Institut des Deutschen Reiches*, 1829–1929. Walter de Gruyter. p. 43.

[3] Carl Schuchhardt. *Die Entstehungsgeschichte der römisch-germanischen Kommission des archäologischen Instituts des deutschen Reichs zu Frankfurt a.M.* Privately printed. Petzold-Druck., Syke, Bremen. 1934.

He describes how opposition and political influence led to the curtailing of the original scheme, to the fixing of the status of the newly-founded body as a ' Commission ' instead of as a ' Branch ' of the German Archaeological Institute, and to the circumscribing of its activities by the limits reached by the Romans in their conquest of Germany. Within these limits however the Commission, with its headquarters at Frankfort-on-Main, was authorized by Imperial decree to pursue the study not only of the Roman civilization itself, but also of the primitive cultures which preceded it ; and since its institution it has also extended its investigations to the development of the civilization of the Romans in the hands of their successors. In effect it has extended its field beyond the limits of Germany, though in general confining itself within the boundaries of the Roman Empire and its ' spheres of influence '.

It is not unknown that there is now a movement in Germany to minimise the contributions made to German civilization by the classical and other cultures, and as a result there has been a suggestion to found a new body specially charged with the investigation of Prehistory and early history (*Vor- und Frühgeschichte*) exclusive of the Roman period and independent of the Commission with its Roman interests. Whether or not this would be to the advantage of research in these fields is a question which cannot profitably or properly be discussed in this country, and is a matter for German learning and the German State to decide; but it may be legitimate to remark that most of the knowledge of the Germanic peoples in the period immediately preceding the Roman epoch is derived from Roman sources, both literary and archaeological, and that the period of migration, without the background of the Roman Empire, is unintelligible. In this country it may be said that the pre-Roman, the Roman and the post-Roman are now regarded as phases of a continuous process of development, and are no longer separated into water-tight compartments : and the same should naturally hold true of Germany. Indeed it has been the peculiar task of the Römisch-germanische Kommission to deal with these three phases as an organic whole, and it cannot legitimately be accused of giving undue prominence to the Roman phase. This however is now being suggested, and it was largely to refute these suggestions that Dr Schuchhardt wrote his pamphlet, of which the most eloquent part is designedly the long list of publications dealing with *Vor- und Frühgeschichte* which have emanated from the Commission since its foundation in 1902, either as separate works or in the regular periodicals. The list is an impressive one, but doubtless it can be argued that it

would have been more impressive still if the Commission had not had to devote a deal of its space to the Roman epoch. Be that as it may, it cannot be denied that in its treatment of *Vor- und Frühgeschichte* the Commission devotes as meticulous care to the preparation and presentation of its reports as it does to its studies in the Roman field. Whether or no it lacks in quantity, the quality of its work cannot be questioned.

Archaeologists in this country will watch with interest the outcome of this situation, and the decisions reached by the German authorities, for it must be borne in mind that in Germany archaeology is an affair of State, and has been since before 1871.

In view of this situation it will perhaps be of interest to record somewhat briefly what additions have been made by the Römisch-germanische Kommission during the last two or three years to its already notable list of publications, each of which is the fruit of many years of study.

In addition to the regular periodicals, which are noticed below, the Commission has in the past been responsible for the publication of six different series of monographs dealing with various divisions of its wide field of study. These works are issued only at irregular intervals.

The series entitled *Römisch-germanische Forschungen*, begun in 1927, has been increased during 1933-34 by the addition of volumes VI–IX. Of these VI deals with a purely Roman site, VII with a non-Roman Germanic burial with Roman material, and VIII and IX with pre-Roman subjects.[4] Vol. X, again on a Roman subject,[5] will probably have appeared before this review is in print, and XI and XII are advertised to appear shortly.[6]

Another series, entitled *Germanische Denkmäler der Völkerwanderungszeit*, of which the first volume appeared in 1931,[7] has been

[4] Vol. VI. F. Fremersdorf. 'Der römische Gutshof Köln-Müngersdorf'. 1933.
Vol. VII. *Das Fürstengrab von Hassleben.* I. W. Schulz. 'Das Fürstengrab und das Grabfeld von Hassleben'. II. R. Zahn. 'Die Silberteller von Hassleben und Augst'. 1933.
Vol. VIII. K. Bittel. 'Die Kelten in Württemberg'. 1934.
Vol. IX. E. Sprockhoff. 'Die germanischen Vollgriffschwerter der jüngeren Bronzezeit. 1934.

[5] Vol. X. R. Laur-Belart. 'Vindonissa, Lager und Vicus'. 1935.

[6] Vol. XI. W. Buttler. 'Die bandkeramische Ansiedlung von Köln-Lindenthal'.
Vol. XII. H. Mylius. 'Die römischen Heilthermen von Badenweiler'.
All this series is published by Walter de Gruyter & Co., Berlin.

[7] Vol. I. W. Veeck. 'Die Alamannen in Württemberg'.

continued by the publication of vol. II in 1934. This volume, by Herr Zeiss, the Assistant Director of the Commission, is a good example of the wide field covered by the Commission's activities, since it deals with the finds from graves in the Visigothic kingdom of Spain.[8] Vol. III of this series is now advertised.[9]

The series of 'Materialien zur römisch-germanischen Keramik', which was begun in 1914 with Herr Oelmann's report on the pottery from Niederbieber, has been increased by the publication of volumes V and VI in 1933 and 1934.[10]

A new volume of the series, 'Germanische Denkmäler der Frühzeit' is said to be in the press.[11] Only 'Römische Grabmäler des Mosellandes und der angrenzenden Gebiete', and the catalogues of museum collections in west and south Germany, have received no additions since 1932.

In view of what has been said above, it is worth noting that of these six series only two deal solely with Roman matters, two deal with both Roman and non-Roman, and two with non-Roman only.

There are also one or two isolated works not forming part of any series, which have been produced by the Commission. A corpus of East Gallic coinage (Die ostkeltischen Münzprägungen) is in process of publication. Vol. I of this work[12] appeared in 1933, and vol. II is in active preparation. A third volume will complete the work. The late Dr Ritterling's *Beiträge zur Verwaltungs- und Heeresgeschichte von Gallien und Germanien* have also been published in conjunction with the Prussian Akademie der Wissenschaften.

The regular periodicals issued by the Commission are two in number, the Annual Report (Bericht), and the quarterly *Germania*.

The 'Bericht', though nominally annual, has not in fact appeared regularly every year, either before, during or after the war. The first number was in 1904, and the issues for 1932 and 1933 (published in the year following) are numbers 22 and 23. Each issue contains a brief

---

[8] Vol. II. H. Zeiss. 'Die Grabfunde aus dem spanischen Westgotenreich'. 1934.

[9] Vol. III. J. Werner. 'Münzdatierte austrasische Grabfunde'.
This series is also published by Walter de Gruyter & Co.

[10] Vol. V. A. Oxé. 'Arretinische Reliefgefässe vom Rhein'. 1933.
Vol. VI. A. Oxé. 'Frühgallische Reliefgefässe vom Rhein'. 1934.
This series is published by Joseph Baer & Co. Frankfurt a.M.

[11] R. von Uslar. 'Westgermanische Bodenfunde des 1. bis 3. Jahrhunderts n. Chr'.

[12] R. Paulsen. *Die Münzprägungen der Boier*. H. Keller-A. Schroll & Co., Leipzig and Vienna.

summary of the year's work of the Commission, under the headings of general, publications, excavations and visits. These activities will be noted more particularly below. The remainder of the volume is devoted to articles of considerable length and importance. Vol. 22 is an outstanding example of the width of the field covered by the Commission, and contains nothing at all on the Roman period. In an essay of 170 pages Herr Nestor, of Bucharest, gives a concise, but full account of the position of the study of Prehistory in Roumania, from the Neolithic period down to the beginnings of the penetration of Roman influences in the first century A.D. The remaining 70 pages are occupied by a study, on somewhat similar lines, of the Viking epoch by Herr Paulsen of Kiel. Both these articles are illustrated with line-drawings in the text, and with photographic plates, which for excellence of reproduction are hard to surpass—an observation which holds good for all the Commission's illustrations.

Vol. 23, by contrast, is devoted almost entirely to Roman material. Herr Koethe, of Bonn, contributes a comprehensive study of Gallic round and polygonal temples of the Empire. Besides a distribution-map (on which the rectangular temples of Gallic type are also shown) there is a complete inventory of all known instances from Gaul, Britain and the Rhine provinces, with plans of those the foundations of which have been traced, and the well authenticated examples are tabulated with brief notes as to the finds and dating material.[13] This article should be of service to investigators of Roman Britain, where more temples of this type may well be found.

On a not dissimilar subject is the second article, by Herr Schleiermacher of Freiburg, which is a study of certain Gallic and Germanic deities represented on monuments from the Rhine provinces. The author deals firstly with the gods depicted with a female consort, and secondly with Epona ; and there is also a note on the Matronae type. There are a distribution-map of the representations of Epona, and three maps for the god with a female consort, according as the god has the attributes of Mercury, Mars or the ' Hammer-god '. Different markings on the maps distinguish the attributes of the consort of each type. The native deities of the provinces of the Roman Empire form a subject about which much yet remains to be learned, and this article has advanced the study by the collection of evidence, and by formulating certain conclusions which will be the basis of further investigations.

[13] This essay was to have been a volume of the ' Römisch-germanische Forschungen ' series.

The third article in this number is by Herr Reinecke of Munich, and is a complete list, again with distribution-map, of finds of 'Germanic' objects in Bavaria, which naturally include a high proportion of Roman manufactures, mostly found beyond the Limes.

Vol. 24, for 1934, has not been seen yet by the writer.

Germania was first issued in 1917, and has appeared regularly since. It is manifestly impossible within the compass of this review to mention individually all the articles which have appeared in it during the last two years, since each issue contains on an average nine articles.

Of the 72 contributions in the last 8 issues (July 1933 to April 1935) 14 are devoted to material of the palaeolithic and neolithic cultures, 11 to the Bronze and Iron Ages, 27 are on Roman subjects, and 14 deal with post-Roman times—the period of the Migrations and the Merovingian and Carolingian epochs. The remaining 6 are on miscellaneous topics. This proportion of roughly a third of the space being devoted to pre-Roman, Roman, and post-Roman subjects is typical of the policy which the Commission has followed for many years, and which is illustrated by its Directorate being composed of experts in these three phases of German culture.

It is worth notice that *Germania* for January 1934 contains Mr M. R. Hull's report (in German) of the 'Samian' potteries found at Colchester. This is a good illustration of the width of the Commission's interests, and it is remarkable that such a report should have appeared in Germany before the shorter notice of the site was given in 'Roman Britain in 1933' in the *Journal of Roman Studies* (vol. XXIV). Two other articles which may be noted by students of Roman Britain are that by Herr Oelmann in July 1933 on the Gallic temples (in this article the author maintains, *inter alia*, that the Wroxeter temple is of Gallic and not of Classical type[14]) and secondly the report in the issue for April 1934 on a 'Samian' pottery of the Trajan-Hadrian period at Aachen-Schönforst. Wares from this pottery may yet be identified in Britain.

Each number of *Germania* contains in addition to the longer articles short notices (*kleine Mitteilungen*) of recent finds, a section entitled 'Fundchronik', which is a record, arranged geographically, of finds relating to antiquity from the various districts within the province of the Commission. The finds of each district are given under the three headings of Prehistoric, Roman and post-Roman. There are also

[14] cf. Bushe-Fox, Second Report on the Excavations at Wroxeter, p. 2 ff, pl. 1, and Collingwood, *Archaeology of Roman Britain*, p. 139, fig. 35.

reviews of recent publications, a bibliography, with list of contents, of periodicals on kindred subjects published in Germany and other countries, and a list of accessions to the Commission's Library at Frankfort, which show that the collection of books is kept well up to date. Indeed it is the best equipped Library of its kind in western Germany, and is steadily increasing, and outgrowing its accommodation. But in this and in other respects the Commission has suffered from the general financial stringency. The rebuilding of the library has had to be postponed, contributions to excavations have had to be curtailed, and the grants made to students to aid them in their research have also seriously diminished. In spite of this the ' Bericht ' for 1932 and 1933 indicates that the Commission is doing its best with straitened means to carry on with its proper tasks in its own sphere.

The breadth of the Commission's interests is further exemplified by the welcome it accords to foreign scholars, who, no less than native students, are accommodated in its buildings at Frankfort, and whose visits are recorded with satisfaction in the ' Bericht '. An example of this welcome is afforded by the tour of the Lower Danube, organized by the Commission in the autumn of 1933, and reported in the ' Bericht ' for that year. This assumed an international character, for in addition to Germany, England, France, the Netherlands, Switzerland, Austria, Hungary, Jugo-Slavia and Roumania were all represented. Such intercourse of scholars of all nations cannot but have the most beneficial effects both on the increase of the knowledge of the past, and on the relations of peoples in the present.

The activities of the Director, Herr Gerhard Bersu, and of the Assistant Director, Herr Hans Zeiss, in delivering lectures, attending meetings, visiting excavations, etc., occupy considerable space in the annual reports, and the other members are not less active. In spite of financial and other difficulties, the Commission may be said to be faithfully fulfilling its task of furthering the study of German civilization from earliest times to the end of the Roman epoch, and beyond, both within and without the limits assigned to it by its regulations.

Notes and News

A PRIMITIVE THRESHING-MACHINE (PLATES I–III)

In the Editorial Notes I have emphasized the importance of studying primitive customs of the living to enliven one's prehistoric researches. An admirable instance occurred recently in Cyprus. As I was strolling through the village of Ayios Amvrosios on the north coast, I came quite unexpectedly upon a tribulum, leaning against a tree. Next day I photographed it (PLATE I), and obtained particulars of the method of manufacture.

The tribulum is a wooden sledge set with flint teeth, and it is driven over the corn to thresh it (PLATE II). It is made by the village carpenter, who also makes the wooden parts of ploughs. He showed me how it was done. A number of wedge-shaped holes are made in the bottom of the sledge—there are 345 in the specimen illustrated—and into these flint flakes are knocked with an iron hammer. They are hit on one of the long sides, mainly near the bulbar end, bruising and battering the edge considerably. This was done in my presence. I also examined the condition of the flakes in tribulums which have been in use for a long time and removed some of them, including those here illustrated. The battered (lower) edge had been worn smooth by use, sharp excrescences having even been worn down and polished to a high degree. This doubtless is caused by the silica in the straw, over which the sledge is driven. The pressure exerted upon the flints by the weight of tribulum and driver, aided by a ballast load of stones, must be considerable.

I submitted specimens of the flakes to Dr Grahame Clark, who has most kindly drawn them for me (FIG. 1) and who observed yet another feature, namely, the existence of longitudinal striae (visible under a lens) upon the polished surface. Dr Clark thus summarizes the characteristics of the flakes :—

'They are primary flakes, with a bulb and platform intact, and they have the following secondary features :—

(1) one edge sharp, the other with more or less battering
(2) the battered edge only shows diffuse lustre of the type associated with friction against corn-stalks
(3) this same edge is rubbed smooth by use
(4) on the surface of the smoothed areas striae can be seen under a glass, running parallel with the line of the flake'.

The archaeological importance of these facts will be obvious. If all these four secondary characteristics are present upon a flake, there can be no doubt about its use ; they prove that agriculture was practised by the people in whose culture-stratum they are found. It is remarkable that no close examination of tribulum-flakes seems to have been made before. For if they are found during the exavation of a site they contribute a most important piece of knowledge about its culture. It is suggested that in future excavators should examine closely such flakes as they may find (after washing them) with a view to determining whether they were so used. The number lost must have been enormous ; even in the specimen illustrated there are about 20 empty holes (I was only responsible myself for two) ; and no doubt the flakes need entirely replacing from time to time, after they are worn quite smooth. The flint is presumably obtained locally ; it occurs near the village.

If the tribulum was used on a site, flakes from it should be found literally in thousands. The Cypriote threshing-floors are situated immediately outside the village, and those I saw were on bare smooth earth. At the time I was leaving the island (at the end of May) the harvest had only just begun in the Mesaoria, where it is earlier than on the north coast. I secured a photograph of some children playing at threshing (PLATE II), which illustrates the process quite well enough. The driver is seated on a special wooden structure, but ordinary chairs are also used. I also saw and photographed a tribulum on sale outside one of the shops in Nicosia (PLATE III).

Enquiries from one or two ' flinting ' friends have failed to produce any evidence of tribulum-flakes from Britain. It is hoped that the publication of this note may result in the re-examination of collections and the close scrutiny of future finds during excavations. Weathering and patination might, of course, obliterate or obscure some of the four criteria ; but the presence of one battered edge would be suggestive, if it occurred constantly.

In his chapter on flint flakes and cores, Sir John Evans (*Ancient Stone Implements*, chapter XII, p. 256) has the following remarks :—

> ' There is, however, another cause why rude splinters of flint should accompany Roman remains, especially in the case of villas in country districts, for the *tribulum*, or threshing implement employed both by the Romans and other ancient civilized nations, was a ' sharp threshing instrument having teeth ',[1] in most cases of flint. Varro[2] thus describes the *tribulum* :—" Id fit e tabula lapidibus aut ferro exasperata,

[1] Isaiah, chap. XLI, ver. 15. [2] De Re Rust, lib. I, cap. 52.

PLATE I

TRIBULUM IN THE VILLAGE OF AYIOS AMVROSIOS, CYPRUS (*See* p. 335)
Ph. O. G. S. Crawford

facing p. 336

TRIBULUM IN USE AT THE VILLAGE OF GEUNYELI, CYPRUS (*See* p. 335)
Ph. O. G. S. Crawford

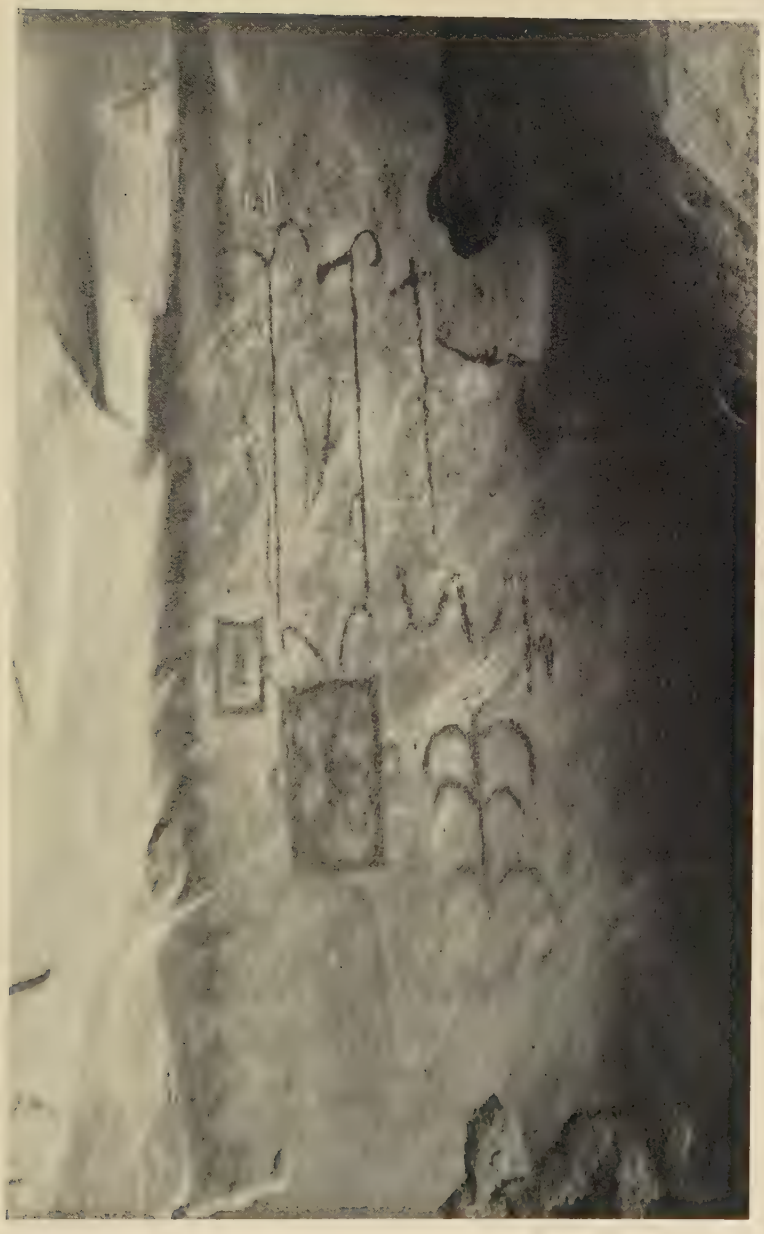
TRIBULUM ON SALE OUTSIDE A SHOP IN NICOSIA, CYPRUS (*See* p. 336)
Ph. O. G. S. Crawford

PLATE IV

IRON PLOUGH-COULTER,
FROM THE WITCOMBE ROMAN VILLA,
GLOUCESTERSHIRE (*see* p. 339)

By permission of the British Museum

PLATE V



MEGALITHIC CARVINGS (MAIN GROUP), ST. PIAT, LE BERCEAU (*See* p. 342)
Ph. Stuart Piggott

MEGALITHIC CARVING, ST. PIAT, LE BERCEAU (*See* p. 342)
Ph. Stuart Piggott

HANDLED BEAKERS FROM BOTTISHAM (ABOVE) AND FORDHAM (BELOW) SHOWING DECORATION ON BASE (*See* p. 348). Scales in centimetres.
University Museum of Archaeology and Ethnology, Cambridge

PLATE VII

quae imposito auriga aut pondere grandi trahitur jumentis junctis ut discutiat e spica grana ". Another form of the instrument was called *traha* or *trahea.* In the East, in Northern Africa, Madeira, Teneriffe, and probably other parts of the world, threshing implements, which no doubt closely resemble the original *tribula,* are still in use. The name is still preserved in the Spanish *trilla* and the Portuguese *trilho,* but survives, metaphorically alone, in our English *tribulation.* Drawings of various *tribula* have been given by different travellers,[3] and the implements themselves from different countries may be seen in the Christy Collection and in the

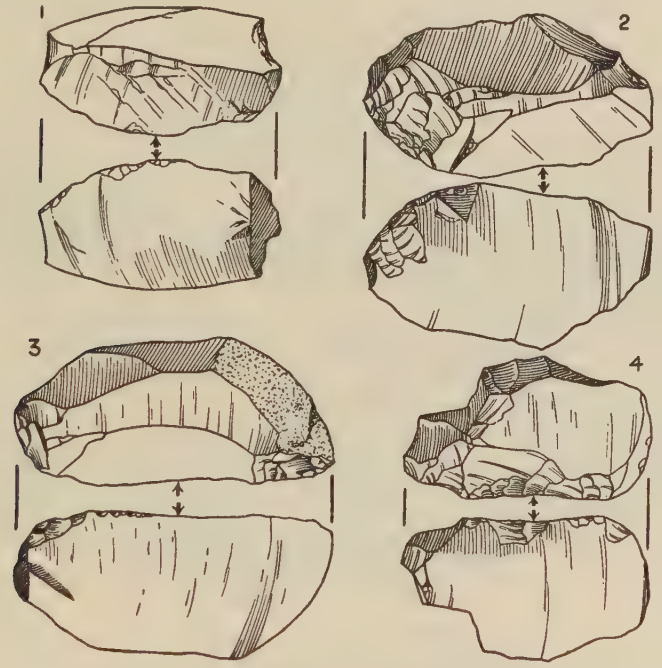


FIG. 1. CYPRIOTE TRIBULUM-FLAKES SHOWING BATTERED AND POLISHED EDGES, INDICATED BY ARROWS (*See* page 335)

Blackmore Museum [Salisbury]. They are flat sledges of wood, five to six feet in length, and two or three in breadth, the under side pitted with a number of square or lozenge-shaped holes, mortised a little distance into the wood, and having in each hole a flake or splinter of stone. In those from Madeira this is a volcanic rock, but in that from Aleppo—preserved in the Christy Collection, and shown in fig. 194—each flake is of cherty flint, and has been artificially shaped. Occasionally there are a few projecting ribs or runners of iron along part of the machine, but in most instances the whole of the armature is of stone '.

[3] Smith's ' Dict. of Gk. and Rom. Ant '. *s.v.* Tribulum. Wilkinson's ' Anc. Egyptians ', vol. II, p. 190 : IV, 94.

It only remains to add that, in addition to the British instances, there are nine tribulums amongst the agricultural exhibits in Monsieur Vayson de Pradenne's exhibition at the Trocadero (see page 257). Amongst them is one from Tunisia (1878) with iron guides and rough bits of flint only, not flakes, and another, from an unknown provenance, set with irregular squarish pointed lumps of some volcanic stone (? Madeira or Canaries). A minute specimen, about 14 inches by 6,

FIG. 2. THRESHING THE CORN IN ARMENIA
From Layard's 'Nineveh and Babylon', 1853

set with small obsidian teeth, must have served a somewhat different purpose.

The following additional description of the use of the threshing-sledge in Armenia is taken from *Nineveh and Babylon*, by A. H. Layard (London, 1853, pp. 17–18) :—

> The abundant harvest had been gathered in, and the corn was now to be threshed and stored for the winter. The process adopted is simple, and nearly such as it was in patriarchal times. The children either drive horses round and round over the heaps, or standing upon a sledge stuck full of sharp flints on the under part, are drawn by oxen over the scattered sheaves. In no instance are the animals muzzled—'thou shalt not muzzle the ox when he treadeth out the corn': but they

linger to pick up a scanty mouthful as they are urged on by the boys and young girls, to whom the duties of the threshing-floor are chiefly assigned. The grain is winnowed by the men and women, who throw the corn and straw together into the air with a wooden shovel, leaving the wind to carry away the chaff whilst the seed falls to the ground. The wheat is then raked into heaps and left on the threshing-floor until the tithe-gatherer has taken his portion. The straw is stored for the winter, as provender for the cattle. These processes of threshing and winnowing appear to have been used from the earliest time in Asia. Isaiah alludes to it when addressing the Jews (XXVIII, 27, 28; See translation by the Rev. John Jones):— 'The dill is not threshed with the threshing-sledge, nor is the wheel of the wain made to roll over the cummin . . . Bread corn is threshed: but not for ever will he continue thus to thresh it: though he driveth along the wheels of his wain, and his horses, he will not bruise it to dust. The oxen and the young asses that till the ground shall eat clean provender, which hath been winnowed with the shovel and with the fan (XXX, 24). Behold, I have made thee a new sharp threshing wain (sledge) armed with pointed teeth (XLI, 15). Thou shalt winnow them, and the wind shall carry them away (XLI, 16)'.

O.G.S.C.

THE ROMAN VILLA AND THE HEAVY PLOUGH (PLATE IV)

Air-photography and excavation have between them told us a good deal about Romano-British peasant villages and the way in which their inhabitants farmed their land. But though it is common knowledge that the characteristically Roman feature of the British countryside was the villa-system, no one seems to have produced much tangible evidence so far about the method or methods of villa farming. As there are signs that this gap in the achievements of modern archaeology may shortly be in some measure filled up by new work, the present moment seems a suitable one for the publication of a highly relevant older discovery.

The famous Roman Villa at Great Witcombe near Gloucester was discovered and excavated in 1818. The work was in the main supervised for the landowner, Sir William Hicks, bart., by Samuel Lysons, then fresh from his great discoveries at Bignor and at the height of his fame, and the two papers he read on the subject to the Society of Antiquaries appeared as a single short monograph in *Archaeologia*, 1819, XIX, 178–183. The ambitious courtyard ground-plan, the fine suite of baths, the excellent mosaic pavements and the painted plaster of the walls all showed that here was a villa of (for this country) the first class. Lysons thought that 'such an edifice' must have been erected 'by one of the superior officers of the Roman government in Britain'; such guesses are no longer fashionable, but whoever the proprietor was, he must have been the owner of a big estate. Here if anywhere one would

expect to find no mere peasant tillage, but real Romano-British ' high farming '. And among the ' great variety of utensils, etc. ' recovered Lysons makes special mention of ' a ploughshare of iron weighing seven pounds and a half, which has been presented by Sir Wm. Hicks to the British Museum '.

Enquiries made in 1934 by Mr E. S. Applebaum have led to the identification of this ' ploughshare ', which is now figured for the first time (PLATE IV). It was duly recorded in the Museum book of ' Donations ' under 13 March 1819, but there was then no compulsory painting of all acquisitions with their registration-numbers : its identity was forgotten and it never received a label. Now there are no heavy examples of true ploughshares of Roman date in the British Museum, and indeed a ' ploughshare ' weighing as much as $7\frac{1}{2}$ lb. would in any case be likely to be not a true share but a coulter. The Museum only possesses two coulters, and of these, one, unregistered and with apparently no history (though till recently stored in the Mediaeval Gallery), is disqualified by weighing 11 lb. 1 oz. The other, which weighs almost exactly 7 lb. 8 oz. and seems always to have been kept among the Lysons donations, is beyond doubt the Witcombe specimen, and it has now been numbered and labelled accordingly. It is $27\frac{3}{8}$ inches long.[1]

We therefore now know that the Witcombe villa estate kept ploughs fitted with heavy wrought-iron coulters. Save for what appears to be a heavy kind of true share, with slanting ' ears ' and a long shank, found in a hypocaust at the Box villa in Wiltshire, and now in the Devizes Museum (*Catalogue*, no. 494*a* (p. 59), pl. XXXIII, 1), this seems to be the first recorded piece of archaeological evidence for connexion between the Romano-British villa and the heavy plough. And whereas the Box implement is apparently not paralleled elsewhere,[2] the Witcombe coulter is an excellent example of the class well-known in Britain from the six found in the two hoards of blacksmith's scrap at Silchester,[3] and the five from the great iron hoard found in 1854 at Great Chesterford.[4] This class has recently been discussed by Lt.-Col.

[1] The coulter is mentioned by Lt.-Col. Karslake in the paper noticed below (*Antiq. Journ.* XIII, 455) as without known provenance : its identification followed a few months after that paper's appearance.

[2] It is clearly not a coulter, as the passage cited from the Devizes *Catalogue* might seem to suggest by mentioning the Great Chesterford coulters in connexion with it.

[3] 1894, *Archaeologia* LII, 742 ; 1900, *ibid.* LVII, 247.

[4] *Arch. Journal*, XIII, 1 ff.

J. B. P. Karslake, F.S.A.,[5] who shows it to be a characteristic fitting of the wheeled plough or *caruca*, apparently as described by Pliny (*N.H.* XVIII, 43).

Discussion of the many issues raised in his paper would be out of place here, but in any enquiry into agriculture in Western Europe before, during, and after the period of the Roman Empire, an important part is bound to be played by correlation between any known type of agrarian unit, such as the villa in southern Britain, and any known type of agricultural implement, such as the heavy plough, and the type of tillage it implies. In this case considerations of weight and size show that the type of tillage implied should be some sort of strip-ploughing, for a heavy plough must cut a long furrow so as to turn as seldom as possible, and some kind of strip-field arrangement inevitably follows. The Witcombe coulter therefore gives an important hint of how the arable of at least one sort of Roman villa in Britain was laid out. Exactly what kind of strip-system this was, and what historical inferences may legitimately be allowed, are questions for the expert. It may be noted that readers of Paul Leser's *Entstehung und Verbreitung des Pfluges* will be able to supplement Col. Karslake's list of similar continental coulters, and that the coulter from Bigbury Camp near Canterbury[6] may reasonably be added to the evidence he marshals in favour of the introduction of the heavy plough to Britain by the Belgic invaders of the 1st century B.C.[7] Provisionally at least that view seems now to hold the field. Then may our connexion between heavy plough and villa be taken as far back as the Belgic invasions ? What stages lie between the little single-steading farm of the prehistoric Celt and the estate centred on ' such an edifice ' as the Witcombe Villa ?. Where archaeology is confronted with such problems, even small single pieces of material evidence, like that here brought forward, are likely to have their uses.

CHRISTOPHER HAWKES.

---

[5] *Antiq. Journ.*, Oct. 1933, XIII, 455–463.

[6] Where much ironwork of late pre-Roman date has been found (*Arch. Journ.* LIX, 212 ff. : coulter, pl. II, 4*a* ; *ibid.* LXXXIX, 87 ff.) and where Mr Jessup's recent excavations have established the fact of a Belgic occupation in the century or so before the Roman conquest, supervening on one of the earlier Iron Age.

[7] A smaller implement, perhaps a native adaptation of the heavy ' Belgic ' coulter, was found in the Glastonbury Lake-Village : Bulleid and Gray, *Glastonbury L.-V.*, II, 369, 384 (pl. LXI, 1, 28), where others are mentioned from Ham Hill and the Lisnacroghera crannog.

MEGALITHIC ENGRAVINGS (PLATES V–VI)

The megalithic monument containing the engravings illustrated is known as Le Berceau and is one of a group of such structures near the hamlet of Changé in the commune of Saint-Piat, 17 km. NW of Chartres (Eure-et-Loire). It consists of six supporters arranged roughly on three sides of a square, with the opening to the west, and covered by a capstone now broken in two. Until 1817 at least it was still more or less buried in what must have been the remains of a covering mound.* There is now no trace of this, nor is there any record of discoveries within the now gutted chamber.

PLATE V shows the main group of engravings, which are on the support forming the north side of the present entrance to the chamber. The technique is that of light ' pocking ' of the stone, which appears to be a siliceous sandstone allied to our sarsen. The symbols represented include crosses, at least one hafted axe, zigzags, a curious ' plant ' form, and ' bucklers '. Near the upper edge of the support adjacent to that bearing the main group of engravings is another ' buckler ', the lower part flaked away (PLATE VI). As to scale, the large ' buckler ' of the main group is exactly 4 inches high exclusive of ' horns ', while the isolated ' buckler ' in PLATE VI is 4.8 inches across between the ' handles '. Both photographs are necessarily oblique, in order to obtain the contrast of reflected light from the smooth surface of the stone.

The engravings obviously suggest comparison with those in the Breton megaliths, but it is difficult to find exact parallels. Hafted axes somewhat similar to that of Le Berceau occur at Mané er H'Roëk (*Corpus des signes gravés des monuments megalithiques du Morbihan*, pl. 24) while the curious loop on the axe-haft is paralleled at Penhape (pl. 57) and the crosses at Mané Lud (pls. 44, 48). The ' bucklers ' seem to represent the final degeneration of such forms as those of Ile Longue (pls. 65–66) with the crest of curved strokes reduced to two curved ' horns '. In Brittany something similar seems to have occurred at Pierre du Moustoir, where the crest is reduced to three or four strokes on either side (pl. 138), while the rectangular form of buckler (somewhat resembling that at Le Berceau) is found at Ile Longue itself (pl. 60).

A sketch of the engravings has been published by le Commandant Octobon in his *Statues-Menhirs, etc.*, pl. XLVIII, 1 and 5, and their existence recorded by M. Henri Bellanger in *Bulletin de la Société Préhistorique Française*, 1934, p. 327. STUART PIGGOTT.

* Information from M. Bellanger.

PLUVIAL AND GLACIAL CLIMATES

Perhaps it is not unjust to say that, at the moment, some archaeologists tend to write of the divisions of Quaternary time as if they were settled beyond debate, while most geologists decline to adopt this view. The following brief observations on the relation of past Pluvial to Glacial climates may therefore be of interest, since they are written in general terms from a geologist's point of view : they attempt to show why many members of that profession are unwilling, at the present juncture, to support with enthusiasm world-wide classifications and chronologies. In reducing a large amount of material to small compass I am indebted to Professor P. G. H. Boswell, Dr G. Simpson and Dr W. B. Wright for many helpful discussions and for valued criticisms and suggestions.

It has often been stated that an ice age must be world-wide in its effect. This is based largely on meteorological considerations which, whatever their functions in the cause of an ice age, must ultimately be a primary factor in the growth, maintenance and decay of land-ice. The existence of such ice certainly reduces to solid form a certain amount of the total moisture available in the atmosphere and hydrosphere. One of the objects of these notes is to discuss whether such abstraction and return of moisture will cause wetter or drier conditions near to and remote from the land-ice.

In the first place we are familiar with cold deserts in high latitudes, and with their existence in Quaternary times near the great masses of land-ice. The occurrence of pluvial conditions in these places does not then seem to be a glacial feature. There is, in fact, a notable deficiency of moisture above and near ice caps.

In the loess plains of northern France the occurrence of river and stream activity seems to have been intermittent and to have marked warm rather than cold phases of climate. We are familiar, also, in England with the rather loose description of gravel fans and terraces being formed ' during the melting of the ice sheets ' in districts in which no land ice was present. The phrase expresses, nevertheless, the belief that more water was available, and greater river activity took place, with improvement of climate. This need not imply greater rainfall. Spring floods below the snow line in mountainous districts produce just such fans and terraces. We are wise if we proceed with great caution before we assume that such signs of active streams and rivers indicate pluvial conditions in regions adjacent to perennial snow and ice. They may, and probably do, indicate the melting of snow and ice, and

of the superficial layers of ground ice. We need more striking evidence before we can assume a change of rainfall.

In short, non-pluvial conditions usually occur near land-ice, and apparent ' pluviation ' in such districts may indicate nothing of the sort. This does not apply universally to ice- and snow-covered mountains in low latitudes.

Are pluvial conditions inter-glacial ? First we must prove that the supposedly pluvial deposits are in fact inter-glacial. For this there is no surer evidence, with all its shortcomings, than the associated fauna and flora. Secondly, if we are assured that the deposits are inter-glacial, we have removed the attendant conditions of a glacial climate, which, though non-pluvial, produces deposits of pluvial aspect. Any proved inter-glacial formation of fluviatile origin is, then, an indicator of the activity of the river, which is now gaining its supply ultimately from rainfall. If the deposits are torrential or markedly coarser than those that the river is now forming, we may fairly assume that they indicate a heavier rainfall, provided the gradient has remained virtually the same. In some rivers this similarity has been proved, their drainage lines are unchanged, and the fauna gives the requisite indication of temperature. The older deposits are almost invariably much coarser than those now forming and may fairly be considered to indicate pluvial conditions in inter-glacial times.[1]

In brief, there is evidence in and near glaciated areas of non-pluvial cold periods and pluvial warm periods.

When we turn to regions remote from well known glacial centres our difficulties are increased. What criteria have we for coupling pluvial periods with glacial or interglacial periods ? The method most used so far has been (1) to compare the number of pluvials with the number of Alpine glacial phases, and (2) to study the association of human implements. Even if we can convince ourselves that the numbers of pluvials and glacials agree, how do we know whether they are synchronous or interpolated ?

I suggest that under the best of circumstances we can only know how many glacials or pluvials there were in certain regions, and that to accept one such chronology for the whole world in the present state of our knowledge is misleading. In the polar regions there is evidence, so far, only of a greater and earlier Quaternary glaciation and of a lesser which still exists, separated by a period during which the land-ice

[1] c.f. 'World Climate during the Quaternary Period', *Q.J. Meteor. Soc*, 1934, LX, 426–478.

retreated but did not disappear. We do not know whether the warm period of the north polar region was synchronous with retreat or glacial advance in the Antarctic.

In this country grave doubts exist in the minds of many of us as to the number of glacial episodes, the age of the first, and indeed what we should call the first. Recent work on the Somme must cause us to reorientate many of our old ideas.[2] Even the Alpine sequence does not remain unassailed, for Italian and other geologists are insistent that four glacial phases cannot be recognized in their mountains, though lowering of temperature rather than increase of precipitation seems to have caused glaciation.

An ice age, from a meteorological point of view, may be world-wide, but we have an abundance of evidence to show that the growth of land-ice, presumably as a result of that stimulus, and the migration and decay of its centres of dispersal was governed by regional conditions. Thus the three great ice sheets of North America were almost certainly no more than partly contemporary, and the glaciation of Greenland is older, and has certainly lasted longer than any of them.[3] We are daily learning more of similar conditions in this country and in Europe. How do these span a fourfold glacial sequence, and in spanning it what were the effects of each and all of them on the rainfall of the tropics ? Judging by the remaining volume of ice we are now only about half-way out of the last ice age, or half-way into the next : how then can we look on present conditions as normal ?

It seems that we should keep two factors entirely distinct : (1) local glacial maxima and minima, each with a history of its own, and (2) meteorological episodes, by means of intricate and constantly changing climatic belts and storm-tracks, each influencing the other, forming and dispersing ice sheets, deserts, or rain-belts. Whether the sequence established in a part of the Alps is a pure record of the meteorological episodes remains to be proved.

Turning to the use of human implements as time-pieces, we meet some doubtful factors : we know little of the time value of perspective when we look towards the older industries, though there is reason to suppose that they lasted longer than the younger. We do not know what allowance of time to attribute to dispersal of forms, and that

[2] H. Breuil and L. Koslowski. *L'Anthropologie*, 1931, XLI, 449–88; 1932, XLII, 27-47, 291–314.

[3] L. R. Wager, *Geol. Mag.*, April 1932, has indicated that Greenland was already glaciated in Tertiary times.

dispersal was far from general or uniform. We are faced at the start with the doubtful relation in this country of the Chellean or early Lower Palaeolithic to a glacial phase, we are not sure which phase with relation to the Alpine sequence. Although implements are by far the best zonal indices, we have much to learn and undue confidence obscures the real issues.

Is a pluvial climate as significant a thing as some of us imagine it to be ? Heavy rainfall is a far less unusual event than the growth of an ice-cap on high or low ground. If it is true to say that, at least in mountains, there has always been ice, surely it is a great deal more evident that there have always been districts of heavy rainfall. There are tropical rains now, but we do not attach glacial or interglacial significance to them, nor to the annual migrations of the rain-belts. When we find that there has been more rainfall in country now desert or rather dry, though well within the tropics, we are perhaps unduly overcome with a desire to correlate. Above all I would suggest that variation of rainfall may be regional without a world wide cause, especially in warm-temperate and tropical lands, and that a little more rain than usual may have disproportionally great effect on the ground. Similarly a slight change of climate, and the eviction of goats, camels, and certain agricultural methods would render large parts of the Sahara and its borders habitable again, as they were not so long ago. Moreover growth or failure of vegetation, presence or disappearance of standing water, may have reciprocal, if minor, effects on the atmosphere.[4] Such factors lessen the significance of pluvials in correlation, though their importance to the human species is, and always has been, enormous.

If we are to associate regional pluvial conditions with regional glacial oscillations, and both with an ultimate meteorological episode, we must have an accurate method of synchronization. It may be claimed for De Geer's glacial varve-clays that they keep one condition a constant, *i.e.* the presence of ice, either by latitude or altitude, and give us the all important factor of solar radiation, the meteorological glacial or interglacial, shorn of all complications of its effect on the ground. De Geer has himself pointed out many of the pitfalls into which the careless or ignorant may slip in attempting such work, but, even if all these are avoided, the personal factor in many forms plays a dominant part that is not wholly acceptable.

If we accept the results we should find ourselves in possession of a synchronized chart of the ' health ' of glaciers from high latitudes to

[4] R. E. Moreau, *Journal of Ecology*, 1933, XXI, no. 2.

low over a long term of years. Now attention has been directed in East Africa to supposedly synchronous oscillations of wet and dry sub-epochs in the plains, advance and retreat of the glaciers in the adjacent mountains.[5] Any measurements of silt accumulations due to rains in these parts must take account of more than one period of rain per year, as at the present day, but the glacial varve is recording at the same time ice melting as a result of solar radiation in particular, an annual oscillation with possible variation of a term of years. Nilsson has correctly pointed out, therefore, that the correlation of glacial and pluvial banded clays, even in the same ideal district, is not so simple as it appears at first sight.

The main result of Nilsson's valuable work there is to suggest that local glacial advances were accompanied by wet sub-epochs in the plains, retreat with dry periods ; in fact the more precipitation the more snow on the mountains and rain on the plains. But in Western Europe the arid loess plains are associated with cold periods and growth of ice, running streams with warm fauna and glacial retreat. So one gathers that in cold-temperate lands and high latitudes the pluvial was interglacial ; that in tropical lands pluvial and glacial increase go together. Varves should synchronize the glacials of high and low latitudes : in fact they seem to record the retreat of glaciers in high latitudes (interglacials) and, as Nilsson has shown, the glacial (or pluvial) of low latitudes.

It will be realized, therefore, that long distance correlation is no easy matter and that glaciation may be dissimilar in cause and effect in high and low latitudes. How far are warm-temperate regions an almost inextricable mixture of these two, and is not the type-area of the 'standard' Alpine chronology within or near that belt? For these and similar reasons one feels that Quaternary climate was flexible regionally, in altitude and in latitude, in temperature and precipitation. Behind the local manifestations of climatic change lie, presumably, certain essentially meteorological factors such as Dr Simpson's theory demands, but it is probably incorrect to suppose that they would give identical and synchronous climatic changes over the surface of the world. Centres of glaciation had their own maxima even in this country : so also did regions of rain and desert wax, wane, and migrate regionally. It remains to be shown what essential connexion there is between rainfall and glaciation, local or world-wide. K. S. SANDFORD.

[5] E. Nilsson, Geografiska Annaler, 1931, XIII, 249–348.

HANDLED BEAKERS (PLATE VII)

Handled beakers as a class have been discussed by Sir Cyril Fox (*Arch. Camb.* LXXX, 1). The purpose of the present note is to call attention to certain features of form and decoration as exemplified by two vessels in the Museum of Archaeology and Ethnology at Cambridge. It seems that a dual division within the class should be made between handled beakers such as those illustrated, whose simple, mug-like forms have no connexion with the A C types with which they are culturally allied, and beakers of vaguely A C forms with handles attached.

The distinguishing features of the beakers illustrated are the cylindrical form, the massive strap-handles and the curiously decorated base, ornamented with circles and radial lines. The Bottisham beaker in particular suggests a non-ceramic form, and it seems probable that such vessels are copies in clay of wooden mugs turned from a log on a lathe. The beakers have a decidedly ' wooden ' appearance, and the type of handle is precisely that which could most easily be carved from the solid projection left for this purpose in the turning. Moreover, such an origin for the type would explain the decoration of the base, the concentric circles being a reminiscence of the growth-rings visible in the transverse section of a log ; the radial lines, the medullary rays and the cracks which usually form along them.

The existence of some form of lathe (probably a pole-lathe) in the Early Bronze Age has to be assumed to account for the turned shale and amber cups (cf. R. S. Newall in *Wilts. Arch. Mag.* XLIV, III–117). As Mr Newall pointed out, the use of amber suggests a Scandinavian origin and he instances wooden cups from Schleswig and elsewhere. The Nordic connexions of the A C Beaker culture, first pointed out by Childe (*Danube in Prehistory*, 200–201) has been emphasized by Clark (ANTIQUITY, 1931, V, 426) and if the origin suggested above for our handled beakers be correct, we have an important link between the turned cups and the A C complex. STUART PIGGOTT.

THE IRON SPEAR OF BUHEN

In reading the review of the second edition of Mr A. Lucas' very valuable *Ancient Egyptian Materials and Industries*, in ANTIQUITY for June, I note a passage (p. 238) on iron in Egypt which your reviewer quotes in inverted commas. Mr Lucas states of the iron spearhead which I found at Buhen, opposite Wady Halfa, in 1910, that ' more evidence must be adduced before the date assigned to this object can

be accepted, especially as it is practically identical with spearheads used until not many years ago in the same locality '.

Now if this last sentence has any meaning it must mean that Mr Lucas suspects that the tomb in question was opened by some Sudanese warrior in comparatively recent years, perhaps during the Dervish War, and that the said warrior was careless enough to leave his own spear in the tomb. Let me assure Mr Lucas and your readers that his hypothesis cannot be seriously considered for a moment. The tomb, which I excavated with the greatest care, had not been opened for many centuries, if ever, after it was built. The evidence, which is given in detail in the publication of *Buhen*,* while not positively excluding the 18th Dynasty is far more in favour of the 12th. It should be remembered that the 2nd Cataract is on the edge of the Sudan, which authorities as great as the late Prof. Gowland have held to be one of the earliest centres of ironworking. It seems not at all impossible that this weapon might have been obtained in commerce or war by a frontier garrison living several hundred miles south of the unwarlike capital of Egypt.

DAVID RANDALL MACIVER.

Mr A. LUCAS writes :—

As, at the time of writing, I am away from note books and works of reference, I am unable adequately to deal with Dr Randall MacIver's suggestion that the primitive iron-smelting in the Sudan may be of very early date [12th Dynasty, about 2000 B.C., or 18th Dynasty, about 1580 B.C. to 1350 B.C.]. This suggestion is supported by a reference to the late Professor W. Gowland, F.R.S., an eminent metallurgist and a writer on ancient metallurgical methods. In my opinion there is neither evidence nor probability for any such early date and it is now generally accepted that the production of iron from its ores originated in Western Asia and that the Sudanese iron-smelting is comparatively late. Since Professor Gowland wrote, much fresh information concerning early metallurgy has been obtained.

[The controversy centres round a definite object—the iron spear of Buhen—either this was found with 12th or 18th dynasty associations, or it was not. Surely it should be possible to prove or disprove this simple point ? The exact typological analogies of the spearhead, its mineral condition, etc., are important, but secondary. We are

* University of Pennsylvania: Egyptian Department of the University Museum. Eckley B. Coxe, junior, Expedition to Nubia, vol. VII. BUHEN, by D. Randall MacIver and C. L. Woolley. 1911.

prepared to give space to a further discussion of this matter. What really is required is a full illustrated description of all the early finds of iron objects in Egypt and Mesopotamia ; but for the moment we had better confine ourselves to Buhen. EDITOR.]

EGYPTIAN FRAGMENTS (PLATES VIII–IX)

The accompanying photographs, for which thanks are due to Mr E. H. SAWYER of Cairo, show two unpublished sculptured slabs of limestone which were built in the 11th century A.D. into the wall of a staircase inside the Bab el Futtûh, one of the most important gates on the north of Cairo. The dimensions of both blocks are approximately 24 inches by 18 inches ; they are apparently fragments of wall-reliefs from ancient Egyptian tomb chapels, and may be assigned by their style to the Old Kingdom.

The relief (PLATE VIII) of the hippopotamus is a fine piece of work, perhaps the best portrait of this animal that has come down to us from the Old Kingdom. It is in very low relief, and for that reason photographs badly ; it should be dated probably to the 5th or 6th Dynasty. Above is the hieroglyph heb, 'festival', and a number of unintelligible scratches. Similar representations of a walking hippopotamus are not uncommon in the Old Kingdom,[1] but almost invariably they have a background of water (indicated by parallel wavy lines) and river plants, or are surrounded by fishes, in a scene of fishing or hunting in the marshes. The sudden cessation of the block-pattern border may indicate that the relief is unfinished, but the presence of a hieroglyph immediately above the figure seems to preclude the possibility that it was to form part of the familiar river-hunt scene which was a favourite theme of the Old Kingdom artists. In view of these peculiarities, it may be that the slab was a sculptor's trial-piece, and was never intended to form part of a tomb-relief. The sculpture has lost its original colouring, but being built into the wall at floor level, has escaped injury at the hands of visitors.

The other relief (PLATE IX) is less well cut, and contains portions of two scenes, divided by a thick line. The upper scene shows short-horned cattle, which have been artificially fattened for the slaughter-house, walking in single file as offerings for the owner of the tomb. They are presumably being driven by a herdsman at the back. There

[1] Von Bissing, *Die Nastaba des Gem-ni-kai*, bd. I, pl. IV. N. de G. Davies, Rock Tombs of Deir al Gebrâwi, part II, pl. IV.

PLATE VIII

SCULPTURED SLAB OF A HIPPOPOTAMUS, BAB EL FUTÛH GATE, CAIRO (*See* p. 350)
Ph. E. H. Sawyer

PLATE IX

SCULPTURED SLAB OF CATTLE AND OF MEN CARRYING OFFERINGS, BAB EL FUTTÛH GATE, CAIRO (*See* p. 350)
Ph. E. H. Sawyer

are two registers, divided by a thin groundline; the animals on the top line have only their legs remaining. The hieroglyphic group between the first and second animals of this row is illegible in the photograph. The lower scene depicts three men bringing offerings in shallow bowls or baskets; the contents of the bowls are stated above them to be km'i, and seem to be round berries or fruits of some kind. The word is not found elsewhere. Below the arms of the third bearer of offerings there was a further inscription, of which only n and the tops of two other signs are visible. The hindermost figure differs from the rest; he wears a diagonal linen band passing over the left shoulder and beneath the right arm. In the Old and Middle Kingdoms this is sometimes a mark of noble birth, and is also worn, both then and later, by the kher-heb or lector priest as a badge of distinction. The present figure is probably a lector priest; he carries in his left hand a similar linen strip. Two of these cloths are often carried in the reliefs by men in the offering procession,[2] generally behind the bearer of incense; the man who brings them usually holds them outstretched before him, one in each hand. The offerer may here have another in his right hand, which is lost. The word above the offering looks like .. 'it but is very indistinct. The red colour of parts of the relief is still preserved, though the surface has been much disfigured by scratches and Arabic graffiti; the stone was built into the wall up-side-down, about three feet from the floor.

Cairo contains a large number of such fragments, often in the most unexpected places, and the majority of them still unpublished. Saqqara is the most obvious source, being near at hand and abounding in good limestone which the later builders could usurp. It is unlikely that the exact provenance of any of these reliefs will be traced; the tombs from which they came must long ago have been plundered and destroyed.

M. S. Drower.

[The Editors wish to thank Mr E. H. Sawyer for the great trouble he has taken to secure photographs of these interesting and hitherto unrecorded sculptures. It is to be hoped that amongst the thousands who take their cameras to Egypt each year some may be found who will photograph the other fragments. There could be no more interesting task, but in this as in all else, good results cannot be obtained without skill and taking trouble].

---

[2] M. A. Murray. *Saqqara Mastabas*, vol. I., pl. VII.

Recent Events

The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.

Sir Flinders Petrie writes :—

'The list of pyramids in the March number of ANTIQUITY (pp. 15–20), omits some published ones, both large and small. Add

7A Meydum, Queen, IV, 52 c. (*Meydum and Memphis* III).
49A Lahun, Queen, XII, 52 c. (*Lahun* II).
53A Mazghuneh, N. Amenemhat IV ? XII. } *Labyrinth and*
53B Mazghuneh, S. Sebeknefru ? XII, 107 c. } *Mazghuneh*, XXXIX–XLIX.

Page 14, line 33, *for* Teti, *read* Pepy I'.

Canon Goddard suggests that the queer expression 'stabbed by flat stones' (ANTIQUITY, IX, 154, quotation) should have been 'slabbed'; pointing out that the author of the quotation, in the passage immediately following, speaks of 'pyramids formed of slabs of rocks'.

A trawler has dredged up a Roman vase from a depth of 900 feet on the Porcupine Bank, 150 miles from the west coast of Ireland. On the bottom is a rudely scratched drawing of an animal, possibly a bear, and a graffito, possibly C PISCI FAGI. This all sounds very fishy, but the find is vouched for by the National Museum of Wales and published in the *Journal of Roman Studies* (1934, XXIV, 220–1, plate XXV).

It is good news that the ruined city of Rayy (Rhages) in Iran is being scientifically excavated by the University of Pennsylvania Museum (Are we to connect this shift of scene with the activities of the Iraq

government ?). The city was wrecked by the Mongols in 1220, soon after which it was visited by the Arab geographer Yakut, who has left a description of it. Subsequently it has been wrecked again by ' commercial excavations '. It has yielded many splendid ' art-specimens ' and, during the latest excavations, some most interesting examples of ' fine chalcolithic pottery ', akin to the well-known egg-shell ware of Susa and Persepolis, but with an individuality of its own. (*Ill. London News*, 22 June, 1935, pp. 1122–3, article by Mr Arthur Upham Pope).

In the 10th century Rayy was chief of the Jibal Province of the Eastern Caliphate, and celebrated for its magnificence throughout the East. It was the birth place of Harun-ar-Rashid, and was regarded as second only to Baghdad (G. le Strange, *The Lands of the Eastern Caliphate*, reprint of 1930, pp. 214 ff.). May we suggest that vertical air-photographs of its ruins would be of very great interest, as revealing the plan, if it should be in any way possible to secure them ? The depredations of the treasure-seekers may not necessarily have obliterated this.

The bicentenary of the death of Thomas Hearne, the antiquary, has been celebrated by placing a memorial in his native parish church of White Waltham, Berks. We owe a great deal to this single-minded, if somewhat unsociable, man. He lived for learning, and some of his editions of manuscripts are still the only ones available. Archaeologists will remember him for his records of discoveries not otherwise known. (Several of these are incorporated on the map of Roman Britain). The tablet was unveiled by Dr Salter, F.B.A., whose address we hope will be published in full. (*Maidenhead Advertiser*, 5 June 1935).

Monsieur Aufrère has unearthed an interesting fact of archaeological history. It appears that Boucher de Perthes regarded himself as the ' continuator ' of the work of a brilliant young fellow-citizen of Abbeville, Casimir Picard, who died at an early age about 1837. M. Picard recognized that certain objects found in peat (not gravel) were

' en usage à l'epoque ou vivaient dans notre pays des espèces d'animaux ou perdues ou éloignées '. This is, as M. Aufrère says, the basic formula of prehistory.

Boucher de Perthes was ' continuateur énergique et persévérant, mais mal préparé et passablement gauche '. M. Picard's mantle fell upon these shoulders. ' J'ai continué les recherches commencées ', said Boucher de Perthes, and to him is assigned a safe niche in the temple of fame, for all his gaucherie and unpreparedness. (*La mouvement scientific à Abbeville dans la première moitié du* XIX^e^ *siècle, et les origines de la prèhistoire*, par Léon Aufrère ; Abbeville, 1935, 4 pages).

A nice instance of a kind of ' fossil tradition ' is given in a Paris fashion-paper, which forecasts that the fashions of the immediate future will be influenced by the exhibition of Italian art, held this summer in Paris.

Dr Marinatos, Director of the Museum at Candia, reports that recent excavations in the Arkalochori district of Crete have resulted in interesting finds, including hundreds of copper Minoan axes and a number of enormous swords, stated to be the largest number of prehistoric swords yet found in Europe, a number of silver axes, and 27 gold double-axes with golden shafts.

Dr Marinatos says the most important find is a copper double-axe bearing three lines of hieroglyphic inscription composed of characters which now make their first appearance on the relics of Minoan civilization. The characters are similar to but not identical with those on the Phaestos disc. The finds belong to the golden age of Minoan art, about the sixteenth century B.C. They have been taken to Candia Museum for cleaning. (*The Times*, 29 June 1935).

Sir Arthur Evans in an article on the discovery of a 'Villa of Dionysos' (*The Times*, 29 July, p. 15) refers to this hieroglyphic inscription, and is of opinion that while one or two new forms appear, 'nearly all the signs find close parallels in the Cretan series' and that it indicates an identical language, the inscription dating from about 1600 B.C. In the same article Sir Arthur gives some particulars of an interesting building discovered at Knossos, in the vineyard of the Villa Ariadne, headquarters of the British School.

A fine marble torso of Hadrian was found resting on a floor-level presenting a series of rich mosaics in some small rooms north and south of the peristyle, from which they were separated by a surrounding corridor. The principal room contained a mosaic medallion of Dionysos, of whom a statue has previously been found in the vineyard. Sir Arthur considers that the building deserves a full investigation and suggests the cooperation of the British Schools at Rome and Athens for this purpose.

A valuable find of gold treasure is reported from Bócsa, in the Hungarian plain, between the Tisza and the Danube. It consists of the contents of an Avar chieftain's grave of the seventh century, and includes a gold goblet 6 in. high. (*The Times*, 11 June 1935).

Mr RAINBIRD CLARKE writes :—

'To the list of English Flint-knapping industries given in ANTIQUITY 1935, IX, 40–41, may be added one recently discovered at Linghills Farm, Great Cressingham, Norfolk. The site is in the stack-yard a few feet northeast of the farm buildings. About 300 yards away is the Blackwater ford of the river Wissey crossed by the Smugglers' road which forms part of the Icknield Way in Norfolk. (O.S. 6 inch, 71 SE). Long double-backed flakes of black unpatinated flint are found a few inches below the surface amid the débris of a destroyed out-building. The form and preservation of the flakes and the alignment

of the remains of this flint-knapper's workshop with the existing farm-buildings suggest a fairly recent date for the industry. This is probably an outlier of the gunflint industry at Brandon, only 9 miles to the SSW on the border of Norfolk and Suffolk. Sample products of this extinct workshop are now in Norwich Museum '.

Two prehistoric lance-heads were found recently on the bank of the Trent, near Attenborough, by a Beeston schoolboy, Douglas Stewart. They are not made of flint, but of quartzite, similar to the material of the pebbles occurring in the local gravels and sandstones. It is probable, therefore, that they were made in the neighbourhood, although it is understood that they are the first to be recorded of their type in the area. (*Beeston Gazette and Echo*, 29 June 1935).

The custom of affixing horns and skulls to buildings and trees is very widely spread. I observed sheep-skulls on garden-walls in Cyprus, and in a tall pine by the Kyrenia-Karavas road (about 2 or 3 miles west of Kyrenia) a couple of horns are firmly fixed at a considerable height above the ground. ' Ibex horns are fastened to the corners of houses by the inhabitants [of the Hadhramaut, in Southern Arabia], a custom undoubtedly of religious origin '.

The accompanying illustration taken in 1932 at Eshery, near Sukhum in Abkhasia (Caucasus) shows that this kind of religious practice at any rate is not yet extinct in the U.S.S.R. What connexion, if any, is there between these skulls and the modern European scare-crow ?

The following advertisement appeared on the front page (personal column) of *The Times*, 1 August :—

> THE HOLY GRAIL.—The newly discovered Cup will be on view August 1st and each weekday, including Bank Holiday, from 10 to 6 p.m., at Palestine and Bible Lands Exhibition, 9 Tufton Street, Westminster (near the Abbey). Admission 1*s*.

It is of course perfectly legitimate to use the relics of the past (however venerable) as a means of raising money, but we should be glad to be told exactly how the advertiser knows that the ' newly

SCARE-CROW IN FIELD AT ESHERY, ABKHASIA, U.S.S.R.
Ph. O. G. S. Crawford

facing p. 356

discovered cup ' is the Holy Grail ; assuming that by that phrase he means not the Arthurian fiction, but the cup used by Jesus Christ at the Last Supper ? (See also the *Daily Mirror*, 1 August, where the cup, which is of glass, is so described, and is said to have been ' found by missionaries in a cave between Antioch and Hamath ').

A Committee has been appointed by the Minister of Education in Egypt to inquire into the illicit sale of antiquities. This has been prompted by the attention given in the local press to the sale of papyri, but it is pointed out by *The Times* correspondent that the complaint has no real foundation, for the Cairo Museum, to which all finds have to be submitted first, does not interest itself in papyri, which are eagerly sought for by European museums. (*The Times*, 25 May, p. 13).

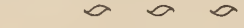
An account of the discovery of the Temple of Jason near Paestum is given in *The Times* (13 July, p. 13) by Signori Carlo Scarfoglio. In April 1934 Dr Zanotti Bianco and Dr Zancani began excavations, working on the particulars given by Strabo, who states that the Temple lay 50 stadia (about 9 kilometres) from Paestum. They were rewarded by almost immediate success and found at the exact distance sufficient remains to indicate the site of the Temple. Excavations have proceeded under the official Archaeological Survey, supervised by Professor Maiuri, and the whole site has now been examined, the foundations and column bases of a temple nearly 40 metres long and 19 metres wide being disclosed. Near it was a smaller temple which can be dated *circa* 7th-6th centuries B.C., earlier than the great temple. Here was found a quantity of Corinthian and proto-Corinthian material, including a statuette of Hera nursing the Child, a witness to the dedication of the sanctuary.

In the course of an article written for *The Times* (31 May) the First Commissioner of Works, the Rt. Hon. W. Ormsby Gore, M.P., puts forward an important proposal for safeguarding that part of Avebury which is in private ownership. He says :—

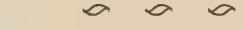
' If this supremely important archaeological area is to be adequately safeguarded, as it should be, a scheme under the Town and Country Planning Act is essential.

' To be successful such a scheme will require the good will and cooperation of the local government authorities in Wiltshire, of the actual proprietors of the land, of the Ancient Monuments Branch of the Office of Works, and of the various public bodies interested in the progress of British archaeology. Of all such schemes the Avebury scheme, in my opionion, has priority from an archaeological standpoint. The site is unique, not only in Britain but in Europe, and it is important that the work of conservation and scientific investigation should proceed without further delay '.

We hope the First Commissioner will pursue the Scheme which he has in mind with all the vigour possible.



The peculiarities of the road-system in the Lincoln District are discussed in *The Times*, 3 August, p. 11. It is claimed that they appear to record a well developed plan of settlements for Roman veterans. The evidence in the district of local roads branching off at right angles—not only from the Ermine Street but from other roads in the area—points to their having been laid out by one authority for a distinct purpose, and that the territory of the *colonia* of Lincoln was planned for ' small holdings '—in fact it constituted a scheme for settling time-expired soldiers on the land.



Reference was made in the March number (p. 101) of ANTIQUITY to excavations at Mapungubwe, in the northern Transvaal. Captain G. A. Gardner, Research Officer for the University of Pretoria, informs us that the third season's work on this site was begun last June and that a quantity of well-made pottery and articles of native manufacture have been found.

Reviews

ENGLISH ROMANESQUE ARCHITECTURE AFTER THE CONQUEST. *By* A. W. CLAPHAM, F.S.A. *Oxford : the Clarendon Press*, 1934. *pp.* XVI, 180, 44 *text-figures and* 48 *plates.* 30*s.*

The old habit of referring to the English architecture of the century after the Conquest as Norman was convenient and not altogether inaccurate. That architecture had its roots fixed in Norman soil, its chief patrons were men who, if not natives of the Norman duchy, were intimately acquainted with it, and, if in time the art assumed a definitely national character, its earliest models were Norman importations. At the same time it was open to other influences and, considered from a wider point of view, it forms an important province of that Romanesque art which, with common principles of construction but with varieties of form due to local conditions, prevailed throughout Europe at the time of the Norman Conquest. This fact has long been recognized by foreign archaeologists. To a Frenchman, Norman architecture is not the Romanesque architecture of a particular region, but the characteristic form of early Gothic which was developed in Normandy from Romanesque; and the title of Mr Clapham's book reminds us that the Conquest, far from putting an end to Romanesque traditions which had hitherto pursued a faltering and unprogressive course in England, brought English builders into close touch with the most vigorous and fertile schools of Romanesque art on the Continent.

The ground which Mr Clapham covers is more familiar and attractive than the difficult field which he entered so successfully in the volume to which this is the sequel. His lucid method of exposition, aided by a series of admirable illustrations, brought home to us the merits and defects of pre-Conquest Romanesque, examined by a fresh and independent judgment which, in arriving at conclusions not always in keeping with those of his predecessors and possibly still open to dispute, was always sane and cautious. His present subject affords less opportunity for adventure and discovery, but there was ample room for a general survey of the art of the period, combining discussion of plan and structure with analysis of detail, and taking into account the most recent work which has been done upon the architectural history of individual buildings and in other local and specialized departments of study. Not only does Mr Clapham's official position as Secretary to the Royal Commission on Historical Monuments (England) give him special opportunity for a thorough acquaintance with buildings of every type, but his authority is fortified by extensive knowledge of the contemporary architecture of France. His discernment of the comparative value of work done by other students is apparent upon every page, and upon certain points, especially upon the history of sculpture, he can speak with an authority second to none.

Full space is given to the variations of plan in the larger churches, the types of parish-church plan form the subject of a separate chapter, and another is devoted to centrally planned churches. In his treatment of the larger buildings Mr Clapham

describes their component parts in order: piers, triforium, clearstory and vaults are followed by towers, west fronts, crypts, windows, doorways and porches. The progress of plan and design is traced in chapters dealing with Cluniac and Cistercian architecture and with the churches of the later part of the 12th century. The discussion of the smaller churches is succeeded by three concluding chapters on masonry and mouldings, ornament and sculpture, and internal decoration and fittings. In spite of extreme compression of a wealth of material, the book is eminently readable, and Mr Clapham deserves congratulation for the skill with which he uses individual examples to illustrate his general points without succumbing to the temptation of dwelling upon details.

No work upon English Romanesque can fail to pay special attention to its masterpiece, the cathedral church of Durham, a photograph of the nave arcade of which is an appropriate frontispiece to the book. The development of Romanesque art in England was remarkable not merely for the imposing size of the building which it produced, but for the precocious achievement which covered Durham Cathedral with ribbed vaulting, designed at an earlier date than any which is recorded in the case of other buildings and completed, after a series of successive experiments and improvements, within some forty years of the conception of the design. It cannot of course be maintained that so great and so perfect an example of Romanesque construction, containing within it the germs of those principles of which Gothic architecture was the logical consequence, was absolutely the earliest building of the kind. But its priority to other dated buildings of the period, first demonstrated by Dr John Bilson towards the end of the last century, is a fact now generally admitted even by foreign architectural scholars who questioned his conclusions for many years. The builders of Durham were at any rate in advance of their age in the quickness of intellect with which they met and solved problems of vaulting, and their experiments with the ribbed vault introduced them to the structural advantages of the pointed arch and to the employment of a system of abutment from whose ultimate form in their hands it is no long way to the emergence of the Gothic buttress-system.

The aesthetic effect of such great designs as that of Durham enters but little into Mr Clapham's scheme, and from a book so well illustrated the reader may perhaps be safely left to draw his own conclusions upon this point. Among Mr Clapham's *obiter dicta*, however, is the remark that the peculiar design of the nave arcades of Gloucester and Tewkesbury is more striking than admirable, the justice of which few will probably dispute. The genesis of the dwarfed triforium in these buildings, so far as previous models are concerned, is an insoluble problem; but it may be mentioned that Dr Bilson's theory, alluded to in a footnote, of its derivation from the small upper triforium above the vaulted tribune in the earlier portion of each church is borne out by the survival of the four-storey elevation thus postulated in the east wall of the transept at Tewkesbury. With such an arrangement before their eyes, in which the height of the ground arcades was reduced by the importance given to the vaulted stage above, it may well be that the builders of the naves laid exaggerated emphasis upon their principal arcades by the simple process of omitting the upper stage altogether.

From such defects of exaggeration and omission Mr Clapham's book is free, and its value is greatly enhanced by the author's sense of proportion in dealing with the wide variety of topics included in his survey. It is possible here and there to add some example of a particular feature to those cited. To the four small wheel-windows mentioned on p. 68 might be added the one in the west gable of St. James' at Bristol, and in the same context it might have been remarked that the large 13th century window at Byland to which allusion is made belongs to a specially Cistercian tradition which

is exemplified in the west fronts of the abbey churches of Les Vaux-de-Cernay (Seine-et-Oise) and Ourscamp (Oise). Allusions to churches in France and Normandy are frequent. If we may insist upon a small point, Mr Clapham's rendering of French place-names is not always exact. Cérisy (pp. 8, 9, 12) appears without its acute accent, and Saône (p. 3) and Cîteaux (p. 71) without their circumflexes, while the 'l' in 'Clairvaulx' (p. 74) is obsolete. Araines (p. 98) should be Airaines. Among English names we notice 'Mells' (p. 104) for Mellis. Talley Abbey (p. 84) and Windrush (p. 131) are assigned to Glamorgan and Oxfordshire respectively: the first is in Carmarthenshire, the second in Gloucestershire. Walter of Hereford (p. 2) should probably be Robert. Lastingham (p. 67), colonized by monks who had seceded from Whitby, became a cell, not of Whitby, but of St. Mary's at York. The *Doppelkirche* at Schwarz-Rheindorf is referred to among castle-chapels (p. 112), but this fine church, which stands so conspicuously on the right bank of the Rhine opposite Bonn, was attached to a nunnery, and the castle-chapel at Nuremberg and, so far as we know, that at Eger, are still in existence.

These points, however, can be revised in the next edition of a work which in plan and execution is of outstanding merit. One historical point is worth noticing. Mr Clapham mentions the monks from Marmoutier chosen *qui operi preessent* in the building of Battle Abbey. Similar phrases are frequently found in such contexts: at Canterbury, for example, William of Sens after his accident issued his orders through the monk *qui operariis prefuit*. These phrases, like so many others, come straight from the Vulgate, and a reference to 3 Reg. v, 15 and other kindred passages will show that the offices thus described imply administrative rather than architectural functions, and indicate that the duties of the monks at Canterbury and Battle were those precisely laid down for the guidance of William of Wykeham in one of his letters of appointment as clerk of the king's works. We are inclined to think that the position of Geoffrey de Noiers at Lincoln and later that of Elias of Dereham at Salisbury were of a like kind, and allowance must be made for the poetical rhetoric which has won for Noiers the reputation of architect and artist.

A. Hamilton Thompson.

PALEOLITHIC MAN AND THE NILE VALLEY IN UPPER AND MIDDLE EGYPT: a study of the region during Pliocene and Pleistocene times. *By* K. S. Sandford. (University of Chicago Oriental Institute Publications, vol. 18). *University of Chicago Press, Chicago; Cambridge University Press*, 1934. *pp.* xxii, 131, *with* 39 *plates and coloured map, and* 25 *text-figures.* 31*s* 6*d.*

This is the third volume of the Prehistoric Survey of Egypt and Western Asia produced for Dr Sandford by the Oriental Institute of Chicago. In the work which led up to the first two he was associated with Mr W. J. Arkell, but in the production of this, which not only covers new ground, but serves as a summary of his researches in the Nile Valley, he stands alone. These researches have occupied him for a period of ten years and it is gratifying to be able to say that the results fully justify the time spent on them. The sequence of industries which is correlated with the Nile and its terraces is now more complete than in the case of any other known river and forms a fitting prelude to the long story of the civilizations which ultimately flourished on its banks.

The history of the river may be said to begin long before the advent of man with the retreat of the Pliocene Sea which extended far to the south between plateaus of limestone. This retreat is punctuated by a series of terraces ranging up to a height of 750 ft. One

at 300 ft. above the present alluvium is arbitrarily taken as the beginning of the Quaternary, but there is still no trace of man. Terraces at 200 and 150 ft. are likewise barren of his remains. In the 100 ft. terrace he makes his appearance in the Chellean stage. This terrace also records the evolution of his handicraft to the Acheulean stage, but the culmination of the latter is only reached in the 50 ft. terrace. The analogy both in levels and industry to the terraces of the Lower Thames is startling and even extends to the inclusion in the 100 ft. terrace of a rude flake industry analogous to the Clactonian. There follow in Upper Egypt terraces at 30 and 15 ft., a level unrepresented in the Thames, the course of which at that stage lay below sea level. The order of succession of these terraces is deduced not from typology or height, but from the fact that the implements of the older occur as rolled specimens in the younger. It is thus absolute and independent of any assumption whatsoever.

The Mousterian gravels are of exceptional interest, the higher or 30 ft. terrace containing early Mousterian implements, the lower more advanced forms. They form however no simple sequence like the 100 ft. and 50 ft. terraces, but are separated by a period of low level during which the Nile cut well below its present course. The 15 ft. or Later Mousterian gravels of the wadis are definitely gravels of aggradation, which thicken Nilewards on a sloping rock-terrace descending below the level of the alluvium.

The lowering of base level which preceded this aggradation Dr Sandford suggests is due to a depression of the surface of the Mediterranean. Of this there is not much direct independent evidence anywhere in the Mediterranean basin, but the idea of a low level at about this date is no new one.

The wadi gravels deposited during the Older Paleolithic bear witness to abundant rainfall all along the Nile. The equivalent gravels of the Mousterian period are less certain in their development and more torrential in their character and possibly indicate the beginning of a change. With the advent of the Newer Paleolithic the lateral tributaries had entirely failed and a steppe climate had established itself. This coincided with the arrival of abundant sediment from the south, which formed a cone or fan of silt very similar to that of the present alluvium. This silt spread laterally into the mouths of the wadis, which being dry made no contribution to it. There are no intercalated locally derived sands or gravels at their mouths. The silt cone has a height of 100 ft. at Wadi Halfa, 60 ft. at Kom Ombo and 20 ft. at Luxor, north of which it probably descends beneath the present alluvium. No explanation as to why its gradient differs so markedly from that of the terraces and the recent alluvium seems to be forthcoming for the present. It was followed by a second period of degradation and gravels formed at an early stage of this degradation but contemporaneous with the silts of the south are found 20 ft. below the alluvium at Beni Suef near the Faiyum. Still later aggradation led to the formation of the present alluvium.

The progressive impoverishment of the rainfall began in Mousterian times and did not reach its climax until after the Neolithic. It is significant that the evidence shows no sign of interruption by recurrent pluvial periods, such as might be supposed either to accompany or alternate with the Ice Ages of Europe; but in this connexion it should be remembered that the deposits of the Nile during the two periods of degradation are inaccessible, and if one may venture for the moment to go further than the author in the matter of speculation, it is the periods of low ocean level which one has learnt in Europe to associate with glaciation.

In the matter of speculative correlation Dr Sandford is so restrained that his most daring flight is the suggestion that the stages of the Nile are controlled by sea-level and

are equivalent to those of the Mediterranean described by De Lamothe and Depéret, the correlation running as follows :—

Nile		Mediterranean
300 ft. Terrace	– – – –	Sicilian
200 ,,	– – – –	Milazzian
100 ,,	Chellean and Acheulean	Tyrrhenian
50 ,,	Late Acheulean –	Monasterian
30 ,,	Mousterian – –	,,

With regard to this correlation the following criticism may be offered here. The stages of Depéret have been found not to have the wide applications which he ascribed to them. They fail on the one hand, as shown by Gortian, where recent orogenic movements have been in operation and on the other in glaciated and other loaded districts which have been affected by isostatic depression; but there is every reason to believe that they hold in areas of prolonged stability and the horizontality of all the deposits of the Nile Valley from the Pliocene onwards indicates that it is such an area. No raised beaches have however, as far as the reviewer is aware, been described on the Mediterranean coast of Egypt. Perhaps Dr Sandford may have something to say on this in his promised volume on the Delta.

In the matter of typology of implements Dr Sandford displays an admirable caution. As regards the Older Paleolithic he seems fairly confident that he is dealing with similar material to that of the type area in western Europe, with the possible exception of the crude flake industry of the 100 ft. terrace, which he only tentatively compares with the Clactonian. The Middle Paleolithic is 'plainly of the "Mousterian" plan' and he finds definite Levalloisian types among the rather scarce implements of the 30 ft. terrace. The post-30 ft. core-and-flake technique he regards as very different from that of the 30 ft. terrace. The continuance of the Mousterian industry in Egypt after the 15 ft. terrace he considers to be established by surface finds of more advanced types than are found in that terrace. Similar advanced types are found in the south in the base of the Sebilian silts and in the late Mousterian terraces of the north where gravel formation continued to a later date than in the south. The use of the term Sebilian is admittedly a make-shift, the connotation of the term, which was established by Vignard at Kom Ombo, south of Luxor, being greater than is desirable. The Sebilian of the silts is plainly an industry of Late Paleolithic type, but lacks many of the features of the Aurignacian, for example the burin. It appears to be characterized by excessive 'backing' of many of the blades, resulting in the ultimate production of crescents, which suggest an approximation to Capsian microlithic industry. The transition to the Neolithic is no more apparent than elsewhere, the stratigraphical records of any passage to the Badarian, if it exists, being buried beneath the alluvium. No Mesolithic industries such as the Azilian or Campignian have as yet come to light.

On the whole the memoir bears internal evidence of the most painstaking and cautious work, and is remarkably free from dangerous speculation. Of its archaeological and geological importance there can be no doubt, and it is both readable and beautifully illustrated.

W. B. Wright.

MINNS VOLUME: EURASIA SEPTENTRIONALIS ANTIQUA IX. *Helsinki*, 1934. (London agents, *Luzac*). *pp.* 410. 30*s.*

It was a happy thought of our Finnish colleague, Tallgren, to organize a Festschrift in honour of the great English scholar who has been the pioneer in revealing the archaeological

riches of Russia to the western world. But it was a still happier thought to use as the vehicle the ninth annual volume of the periodical in which Tallgren himself has been carrying on Minns' work. A Festschrift is usually a place where important contributions to knowledge are buried in oblivion ; for the number of libraries that can bear the expense of such volumes is very small, and so the archaeologist of the future, who will have to rely on these libraries, will remain in ignorance of their contents. The many valuable papers assembled as tributes to Professor Minns will escape this fate ; the volume forms part of a series now long recognized as indispensable on the shelves of any respectable archaeological institution, and seeing it, every reader will desire to have a copy for reference in his own library.

The volume is thoroughly international. The contributors include Bulgarian, Finnish, German, Hungarian, Latvian, Roumanian, Russian and Swedish authorities. The articles touch on all regions in northern Eurasia from China to England, and on all periods from the Old Stone Age to Viking times. Yetts describes how about 125 B.C. the Chinese learned of a superior breed of horses in Iran and describes the efforts they made to secure for breeding purposes animals of this western stock, identifiable with the famous Nesaean steeds of antiquity ; before this date the Chinese, like their nomad neighbours, had been content with a small horse, only slightly improved from the wild steppe horse of Przewalski. The Luristan bronzes form the subject of two articles: Arne draws attention to striking European parallels that go back as far as the ' Tumulus Bronze Age ' and extend as far west as South Germany. Hančar examines in greater detail the agreements between Luristan and the Bronze and Iron Age cultures of the Caucasus. In the course of his study he gives a very useful classification of the relics distinctive of the several cultural groups on both sides of the Caucasus. A number of special agreements between Luristan and the North Caucasian Koban culture are plausibly attributed to the descent of the Cimmerians, who would have intruded from the north into an older province of purely Asiatic metallurgy. But Hančar's Cimmerians can hardly be those to whom Nestor attributes the Late Hallstatt culture which he describes in Roumania.

Earlier Caucasian antiquities are discussed by Professor Tallgren, who adds many interesting details and illustrations to the account of the dolmens he gave in ANTIQUITY, 1933, VII, 190–202. These magnificent monuments and the ' statue menhirs ' of the same region must now receive due consideration in all discussions of megaliths whether in Denmark or India. Tallgren cites Åberg's proposed reduction of the date of Troy II in support of his own chronology for the Caucasian monuments (1800–1500 B.C.). But Bittel's publication of the Cappadocian parallels to Troy and the American excavations at the site have robbed this argument of its force. The question will certainly be solved eventually by excavations in Iran where Tepe Hissar already reveals many, still undated, points of contact with the Kuban culture.

Burkitt takes us back to a far earlier period : he describes and illustrates the palaeolithic female statuettes from France to Siberia and shows how they characterize the Asiatic component of the European ' Aurignacian ' culture. At the other end of the time-scale Kendrick explains with masterly lucidity and simplicity the really very intricate processes adopted by Anglo-Saxons and Vikings for the decoration of iron weapons. Scholarly papers by Alföldi and Fettich help us to appreciate how little the nomad invaders from Asia contributed to the art and culture of Europe. Archaeologically they can only be recognized by the manner in which they diffused or blended various cultural elements—including in the case of the Avars many Christian symbols—which

they had picked upon European soil. Wace issues a timely warning against accepting too lightly the theory that the Dimini culture of Greece denotes an invasion from the Ukraine of Transylvania ; the new discoveries in Macedonia and the Peloponnese have made such a migration seem less likely than it did ten years ago. And Makarenko describes a new ' neolithic ' culture on the steppes between the Black Sea and the Caspian which may be earlier than the familiar contracted burials under barrows (kurgans). The dead are buried in the extended position without any external monument above the grave. Pottery and metal are absent but knobbed mace-heads do not look early. Nerman gives a lively account of the Swedish colonies on the Baltic as illustrated by his recent excavations and goes on to discuss the rôle they played in the great Viking expansion to the southeast that linked northern Europe with the Arabian world. But an enumeration of all the leaves in this wreath of tribute would take up too much space. The examples rather arbitrarily selected must suffice to show its luxuriant wealth. V. G. CHILDE.

PROGRESS OF ARCHAEOLOGY. *By* STANLEY CASSON. *Bell*, 1934. *pp.* 111 *and* 24 *plates.* 6*s.*

It is necessary first of all to say that Mr Casson's book is substantially a reprint of a series of articles which appeared in *The Listener* during 1933 ; but with the same breath one ought to make it quite clear that *Progress of Archaeology* is not one of those unhappy attempts to make a book out of popular newspaper articles which had much better remained forgotten.

Most of us at one time or another find ourselves criticizing a book for something that it does not intend to be, and therefore the reader will be wise if, at the outset, he understands that Mr Casson had no intention of presenting a text-book of world-wide archaeology. His aim was rather to make a reasonably general survey of recent archaeological knowledge, a survey of the results obtained from sundry excavations undertaken in various parts of the world during the last twenty years, and therefore it is manifestly unfair to set his book side by side for comparison with other accounts of particular and detailed areas.

The preliminary chapter entitled ' What the Archaeologist wants to do ' sets out a most depressing view of the origin of archaeology as a learned study in the years following the Industrial Revolution. In this, of course, there is some truth, and no one would deny that the acquisitive habits of the ' Captains of Industry ' in making private collections of antiquities were unscientific and reprehensible to a degree—Mr O. G. S. Crawford once discussed that matter with thoroughness—but there are still some of us who like to think that Camden, Aubrey, and Stukeley, antiquarians though they were, were the fathers of English archaeology. We should also have been pleased to see the name of Pitt-Rivers mentioned in connexion with the establishment of serious archaeological method in Britain.

The author's plan is to consider nine regions where recent research has produced tangible results, and by this means he covers in broad outline Europe, Asia, Africa, and Central America. Each region has its own complex problems ; some of them are treated more generously than others, but on the whole there will be little quarrel with Mr Casson's judgment. One outstanding feature, however, is bound to cause comment, and that is the very inadequate account of the Old Stone Age discoveries in Africa and Palestine.

Britain itself is considered in the province of Western Europe, and what Mr Casson does is to emphasize the Continental affinities of British archaeology rather than to give a

detailed account of the various excavations that have made a correlation between Britain and the Continent possible : indeed, one of the most important, that on St. Catharine's Hill at Winchester, finds no mention at all. Another disappointing matter is that Mr Casson, who is one of the most enlightened and provocative writers on sculpture, should have dismissed the Saxon Rood of Romsey in one line, without even a hint of the traditions of the refugee Greek sculptors which may have influenced its conception.

One of the best chapters is that dealing with Greek lands, in which the author is a notable specialist. Recent work, he points out, has amplified and not revolutionized our knowledge which was already very full, and future research may well be directed towards the Hellenistic Colonial settlements.

Mr Casson's style is attractive. It never becomes a subjective background for the display of archaeological wares, and although there is a welcome absence of archaeological jargon, the author has wisely avoided any attempt to popularize ' what, by its nature, is a study unsuitable for popularization, in the accepted sense of that term '. The book can be cordially recommended to the student and general reader alike. Its illustrations are above the usual standard ; it is well printed and produced at a reasonable price, and is altogether a work on which Mr Casson can be congratulated. R. F. JESSUP.

DIE FELSBILDER VON YAZILIKAYA. *By* KURT BITTEL. (Istanbuler Forschungen, herausgegeben von der Abteilung Istanbul des archäologischen Institutes des deutschen Reiches, 5). *Bamberg*, 1934. *pp.* 11 *and* 31 *plates.* 10 *marks.*

The fifth volume of *Forschungen* issued by the Constantinople Section of the German Archaeological Institute contains a complete series of direct photographs of the famous sculptures in natural rock-clefts near the capital of the Hittite Empire. Maps, plans, and views are added to give a clear idea of the situation of the monuments. The position and the lighting of the carvings makes photography exceedingly difficult. Museum photographs of the plaster casts, taken by Humann in 1889, are accordingly added for several figures. They afford a clearer insight into the details than the direct photographs and incidentally reveal the damage which the monument has suffered in the last forty years. The author has prefixed to his photographs an exhaustive bibliography and summarized the various conflicting attempts at interpretation and dating. He has refrained from adding yet another attempt, but has left the archaeological world his debtor for a complete, well-reproduced and inexpensive record of these intriguing scenes of Hittite deities and ritual. V. G. CHILDE.

PAPYRUSFUNDE UND PAPYRUSFORSCHUNG. *By* KARL PREISENDANZ. *Leipzig : Verlag Karl W. Hiersemann*, 1933. *pp.* XVI, 372, 2 *maps.* 20 *marks.*

A history of any branch of classical studies is apt to become a bald recital of long-forgotten names and repetition of outmoded theories. Dr Preisendanz's book has none of these defects ; partly because papyrology as an independent science is of such recent growth—the date of publication happily coincides with the 70th birthday of Prof. Wilcken, who has done so much to create and guide it—and partly because Dr Preisendanz has mastered in an unusual degree the art of combining readability with scientific accuracy and detail. His book is, in short, far away the best and fullest survey of papyrology which has appeared. At the same time it suffers from serious defects : the author in a disarming preface refuses to be bound by the ' strict definition of the term papyrology ',

but this does not altogether compensate for the lack of a logical plan which is specially serious in what is bound to become a standard book of reference. Thus, the very detailed opening chapters, on papyri of medieval Europe (papyrus was used by the Papal chancery until the middle of the 11th century), and on the papyri of Herculaneum, with the fascinating story of the famous *Macchina dei papiri* by which the labours of 150 years have induced the charred rolls to yield up their secrets, do not excuse the very scanty notice given to papyri in languages other than Greek and Latin. Within these limits, however, Dr Preisendanz has written a lively chronicle of the most important discoveries, from the *Charta Borgiana* in 1778 to the two sensational finds of recent years, the Chester Beatty Biblical papyri (the earliest of them written within a century and a half of the Crucifixion) and the Manichaean religious books now being painfully but triumphantly deciphered in Berlin. Half-way through his task Dr Preisendanz abandons a chronological for a territorial arrangement, which makes it rather difficult to find one's way about and leads to some duplication ; though perhaps inevitable, the change in method might have been better managed. The census of collections of papyri which follows is rightly stated to be incomplete, for it even omits items noticed in the preceding text, and the bibliography of papyrology at the end is definitely a mistake, for it is neither even passably complete nor germane to the purpose of the book. An excellent index is a redeeming feature ; and on the whole Dr Preisendanz is to be congratulated on the way in which he has carried out an exceedingly difficult task. T. C. Skeat.

PRÄHISTORISCHE FORSCHUNGEN IN KLEINASIEN (Istanbuler Forschungen, 6). *By* Kurt Bittel. *Istanbul*, 1934. *pp.* 145 *and* 22 *plates.* 13.50 *marks.*

Asia Minor constitutes a natural bridge between the Babylonian cradle of history and the Aegean and Central European worlds which remained illiterate much longer. And indeed the earliest Bronze Age of Central Europe (and therefore its whole prehistoric chronology) is linked through Troy with Anatolia rather than with the Mediterranean and Egypt or Syria. Only the delay in exploring the Anatolian hinterland has forced prehistorians to resort to indirect and ambiguous connexions through Crete with Egypt for dating the Trojan finds and with it the Early Bronze Age of Europe. Conflicting interpretations of the often obscure evidence have given rise to controversies and uncertainties of a disquieting nature. Bittel's well-documented and illustrated book helps to settle some of these doubts, and becomes indispensable to a comprehension of Aegean and Continental prehistory. He not only gives by far the most comprehensive survey of the Anatolian material that has appeared, embodying the results of current excavations down to the middle of 1934, but also succeeds in establishing a reasonably probable system for the arrangement of the material.

It is true that for the culture-sequence in Central Anatolia Bittel has to rely almost exclusively on the American excavations at Alishar Huyuk. But he himself assisted in the operations and can supplement and control the unsatisfactory published reports from his personal observations. By the use of this material Bittel can re-establish the chronological position of Troy, refuting the attempts to bring the second city as a whole down into the second millennium B.C. For at Alishar goblets of a form peculiar to Troy II appear substantially earlier than cuneiform tablets of the ' Cappadocian ' type. The partition of the Trojan material itself is assisted by reference to Miss Lamb's work at Thermi as well as to the results of the Americans at Troy itself.

Bittel does not accept without reserve Frankfort's theory of a relatively homogeneous culture extending right across the plateau from the Aegean to Armenia and even northern

Persia. The earliest pot-fabrics from Central Anatolia are indeed black or, more rarely, red, but, though the forms are anything but primitive, the very characteristic types that are so familiar from Troy I, Thermi and Yortan are missing. First, in the second period, mis-termed by the excavator Alishar I, do we meet cups with high handles and the other well-known types, and even then in a much less developed form than in the west. Bittel stresses the contrast—perhaps overstresses it; for comparison with contemporary cultures elsewhere reveals how exceptional cups with handles really are. And jar-burials and metal types disclose already a cultural community with the West. Moreover, late in the period of Alishar I, the two-handled goblets of specifically Troadic type appear there. Subsequently the divergence between Eastern and Western Anatolia becomes still more pronounced. The ' Cappadocian ' painted wares extend to Van and Malatia on the east, but on the west barely cross the steppe belt between the Halys and the Sakaria. A map is inserted to emphasize this point.

The text contains the documentation for the foregoing conclusions, including a list of 158 sites, a large map and photographs and drawings of pots, axes, bronzes. There follows an admirably cautious comparative chapter. Particularly deserving of mention is the evidence there adduced that in Bulgaria Anatolian culture appears in *tells* as intrusive, and overlying settlements with the usual Thracian graphite ware. It would have been helpful if the author had discussed more fully the connexions of Anatolia with the Orient and their geographical bases. Two great routes cross the plateau : besides the familiar route of the Baghdad railway to Babylonia across the North Syrian plain, a famous caravan route runs through the mountains across Azerbeijan to Central Asia. And so in prehistoric Anatolia we find already, beside obvious indications of contact with Mesopotamia, no less explicit and more intriguing hints of connexions with Tepe Hissar in North Persia and Anau in Turkestan (pins with double spiral heads, copper stamp-seals, beak-spouted vases and so on). V. G. CHILDE.

THE ARCHAEOLOGY OF COOK INLET, ALASKA. *By* FREDERICA DE LAGUNA. *Published for the University Museum by the University of Pennsylvania Press, Philadelphia*, 1934. *pp.* 263. 72 *plates and* 5 *text-figures. Price not stated.*

This report is based on three seasons' excavations by Dr de Laguna from 1930 to 1933 and appears with commendable promptness. It was hoped that one result of the work would be to shed light on the problem of the precursors of the present inhabitants, the Athabaskan Indians. Dr J. Alden Mason had suggested that the earlier inhabitants possessed an Eskimo culture, but Dr Birkett Smith had argued that the population only became ' Eskimoised ' in the course of time.

The material from the excavated shell mounds falls into four stages of an Eskimo culture older than that of the Athabaskan Indians in this region. The material from the earliest period is of purer Eskimo type than that of the later periods, but the author points out that finds from period I are scanty and that it is not safe to base conclusions upon the few specimens that have been found.

There is an exceedingly technical chapter dealing with skeletal remains, but none of the older bones were complete enough to be of any value in determining the physical type. The author is cautious enough to say that Dr Birkett Smith's theory that the first inhabitants south of the Yukon were not Eskimo, remains neither demonstrated nor refuted.

The student of European prehistory will be particularly interested in the chapter on rock paintings. Those from Bear Island have a style of their own and the painting of a

pregnant woman recalls distinct parallels with the south and southeast Spanish palaeolithic art. Dr de Laguna is unable to shed much light on the identity of those who made these paintings, but suggests that the Bear Island group belong to the older midden culture, because the paintings occur at a convenient height above its level. Such a dating criterion sounds a little naive, though it may carry more conviction on the site.

The plates which are intended to show the sites and sections are, on the whole, a waste of space. The plates of finds, however, are extremely good and were presumably taken in a studio. This strengthens the idea which one gets on reading this book, that the expeditions were undermanned. The presence of a good photographer on the expedition would have been of great service.

One glaring omission from this otherwise comprehensive report is difficult to understand. There is no index, and the list of contents in the front of the volume does not in any way repair this omission. This makes an already slightly clumsy report difficult to use with any speed. NORMAN C. COOK.

LE MONDE ÉGEEN AVANT LES GRECS. *By* P. WALTZ. *Paris : Armand Colin*, 1934. *pp.* 206, *and* 13 *illustrations. francs* 10.50.

This small summary of Cretan and Mycenaean culture appears to be almost exclusively a compilation from existing books. It is not up to date and is so dogmatic as to the course of Cretan history that the reader might well imagine that it was drawn up from the personal records of the kings of Cnossos. The finds at Ras Shamra, a French excavation that has been in progress for several years, seem to have made no impression on the author's reconstruction of prehistory, while his title presupposes that he has no clear views on the date at which the Greeks arrived on Aegean shores ; indeed it begs the most important question of all.

After learning that ' dans les Cyclades les poteries mycéniennes font concurrence à la ceramique crétoise ' (p. 83), that ' Atarissias n'est sans doute que la transcription du nom d'Atrée le père d'Agamemnon ' (p. 90), and that the signs of the Phaestos disk were ' gravés au poinçon ' (p. 156) the reader will soon realize that the author is unaware of the bulk of recent controversy and of the details of the subject of which he gives what is meant to be the best-informed and the most up to date summary in the French language.

Needless to add, one of the few and bad illustrations turns out to be that fifth-rate fresco-painting inevitably known as ' La Parisienne '. S. CASSON.

ANTIOCH ON THE ORONTES. I, The Excavations of 1932. *Edited by* GEORGE W. ELDERKIN. *Princeton University Press and Oxford University Press*, 1934. *pp.* 156, 17 *plates* (*one in colour*) *and text-figures.* 63*s.*

The excavations at Antioch sponsored and conducted by Princeton have proved fruitful. This very thorough publication is further embellished by a section on the new mosaics from Yakto, which add considerable knowledge to what we know of the painting and mosaic of the fifth century A.D.

The reviewer inevitably turns to the fine mosaic illustrated in colours which has been awarded to Worcester Art Museum as its share of the discoveries. It comes from a floor of the first century A.D. It forms one of a series of splendid panels. The whole floor has been removed and the panels distributed. The central scene of the Judgment of Paris goes to the Louvre (since the excavations are in collaboration with the French authorities) ; a panel of a satyr and Bacchante goes to Baltimore, and Princeton gets a

fragmentary but very lovely ' Aphrodite and Adonis '. Thus a mosaic which might have perished *in situ*, or languished in some Syrian museum, now serves to elevate and instruct the periphery of the ancient world. One interesting fact that resulted from the removal of the panels was that it was found that they had been brought by their makers to the house from the studio in a finished state, and let in complete into the floor. This fact is of great importance to the study of mosaic.

The importance of the panels, of which the Symposium of Dionysos and Herakles is the finest as a piece of composition and execution, lies in the fact that they evidently reflect paintings almost certainly of the Hellenistic age, as is indicated by the Hellenistic formulae of the border. The Judgment of Paris is weaker in composition than the Symposium, but reflects a distinct tradition of painting.

The Yakto mosaics, published by M. Lassus, belong to the border-period of the fifth century and contain remarkable scenes. It would be hard to decide whether they were designed by and for a Christian or a Pagan. One part of the mosaics shows the nymph Arethusa, rising from her pool. The main and larger floor shows a strange character. In a central *tondo* is the bust of a woman, anticipating in manner and shape the medallions of Byzantine mosaic of a century later. She holds her right hand raised, and in her left a bouquet of roses. She is labelled in the field as Megalopsychia. She is clearly the dominating motif. The rest of the panel shows a complicated hunting-scene in which take part the following named characters : Meleager, Actaeon, Teiresias, Narcissus, Adonis and Hippolytus. M. Lassus suggests with reason that each of these is a typical instance of Aristotelian megalopsychy, interpreted in the later manner of moralizing Christians, though there is no hint of Christianity in the scene. But it must have been a strange householder who adorned his floors with such stern stuff. Nor would the classical scholar immediately tabulate this list of offenders as perfect instances of megalopsychy. Rather one thinks of Alcibiades and Themistocles. Into this moral conception there seems to have crept a new hint of a quality that was likely to lead to destruction, more especially of those who defied the gods. This is indeed the East reinterpreting Greek morals against a Semitic background. Aristotle would never have given such a list of instances such as this !

Round the scene is a border in which are represented many of the main topographical features of Antioch, with the names of each building attached. It will evidently be of use to excavators. But the contribution of this mosaic is mainly iconographic. The Megalopsychia is indeed a remarkable subject, rather charmingly rendered. The bunch of roses evades the interpreter as an adjunct, and it is remarkable that such a moral quality should be rendered as so amiable a lady. Indeed a minor mystery. We have yet much to learn about the background of fifth century Greco-Syrian art. Unlike the first century panels this scene must have been composed *in situ*.

The remainder of this book describes adequately and faithfully the various areas excavated and objects found. Apart from the mosaics there is not much of importance. One gets the impression that Antioch has been much mishandled by the passage of time.

S. Casson.

THE CAMBRIDGE ANCIENT HISTORY. Vol. ix (The Roman Republic). *Cambridge University Press*, 1932. *pp.* xxxi, 1022 *and* 18 *maps*. 37*s* 6*d*.

This volume includes essays on Pontus by Professor Rostovtzeff ; on the Jews by Dr Bevan (an admirable sketch of the Jewish background to the Gospel story) ; and on Parthia by Dr Tarn—a vivid description of this vigorous people : ' one gathers the

impression that they thought all religions useful, none material; what mattered to a man was his horse, his bow and his own right arm'. Mr Stevenson writes on Provincial Government, Mr Sikes on Literature in the Age of Cicero, Professor Wight Duff on Ciceronian Society, Mrs Strong on the Art of the Roman Republic and Professor de Zulueta on the Development of Law under the Republic. The long story of the wars of the century is told, necessarily on a scale more informative than stimulating, by a series of writers.

Politics, however, are the essence of this period of history, and even the great generals (Caesar excepted) are best known to us at the times when they had sheathed their swords. It is the period of the Gracchi, Marius, Sulla, Pompey and Caesar, all of them helping to destroy the Republic and all of them, as we are so well reminded over and over again in this volume, unconsciously laying the foundations of the Empire. And we have here a vivid account of the political history of the last century of the Republic, from the Gracchi of Mr Last to the Caesar of Professor Adcock. Mr Last, indeed, narrates the political history of the years 133–67 B.C. His Gracchi are altogether intelligible. Tiberius wanted to relieve unemployment: he was no theoretical economist or agriculturalist. Gaius was honest in his desire to enfranchise the Italians. Sulla was efficient and businesslike; he was no mere reactionary—indeed, some of his measures have a distinctly 'popular' tinge. If Sulla failed to see the real problem in remodelling the Roman constitution, it was because he had not the lesson of Caesar's career to guide him. Only in one respect does Mr Last's historical judgment seem open to question. Would the senate of 123 B.C. really have preferred to be swamped (for all purposes) by the admission of 300 new members, rather than surrender one of their functions, the control of the public court? On the other hand it is hard to believe that there can be any more lucid or convincing description of the *senatus consultum ultimum* than Mr Last has written on pp. 82 ff.

The Ciceronian period is described by Dr Cary but Cicero has perhaps suffered by compression between the great figures who preceded and followed his brief dominance in Roman politics. And finally there is Professor Adcock's realist Caesar, a dictator who, as far as the evidence goes, did not aim at establishing a dynasty; no would-be Hellenistic monarch-god but the holder of a position 'no more royal than it was divine'.

This volume is in all respects up to the high standard of its predecessors. In one respect it marks a large advance on them. There is, in addition to the usual excellent notes and bibliography at the end of the book, a great deal of valuable annotation at the foot of each page. This helps to explain, and fully compensates for, the extra weight of a volume which contains not much less than half a million words.

J. P. V. D. BALSDON.

THE PLACE-NAMES OF SURREY. *By* J. E. B. GOVER, A. MAWER *and* F. M. STENTON *in collaboration with* ARTHUR BONNER. English Place-name Society, vol. XI. *Cambridge University Press*, 1934. *pp.* XLVI, 445 *and* 7 *maps.* 21*s.*

No one can fail to admire the patient industry and scholarship of the compilers who have amassed so much detailed information as is recorded in this volume. It is a quarry for all time for the historian, the philologist and the archaeologist. But many deductions have already been made by the editors themselves, and their analysis of the material is contained in the lengthy introduction and in the appendices. A more bulky volume than is usual in this series has resulted from the inclusion of some 50 pages of field and minor names.

Readers of ANTIQUITY will be interested primarily in the archaeological information provided. The name ' Surrey ' (cf. Suthrige in the Anglo-Saxon Chronicle) signifies the southern region, the second element *gē* in the name being the O.E. cognate of the German *gau*. The Saxon invaders approached by way of the Thames and settled on both its banks : those on the southern bank in time spreading over the territory which came to be known as Surrey. This settlement is still commemorated in the names Middlesex and Surrey, but it had ceased to have an independent existence by the time that written records began.

The invaders spread up, and first colonized along, the tributaries of the main stream, as in shown by the various names ending in –ing (*e.g.* Woking, Godalming, Dorking, Tooting) on the banks of the Wey, Mole, and Wandle.

The place-names in the south of the county and furthest from the Thames have affinities with those of the neighbouring counties of Kent and Sussex, and the spread of the settlement naturally was checked by the Weald. Life in the clearings in the Weald can be visualized from the names of the villages with the aid of the distribution-maps. One of these shows that *lēah* (modern *–ley*), signifying clearing, is distributed generally over the southern half of the county, but that *falod*, signifying a fold for animals, and *hyrst*, probably signifying a wooded height, since it means both hill and wood, are densely crowded on the Sussex border and away from the main river-system. *Denn*, signifying a woodland pasture for swine, is also found in the wealden part of the county.

Another map shows the distribution of *ceart*, a word especially interesting with regard to Surrey, and occurring only on sand or sandstone. It survives in the dialect of Surrey and Kent as *chart*, and denotes ' rough common overgrown with gorse, broom and bracken '.

That the southwestern corner of the county was colonized early by the Saxon invaders is indicated by a collection of names there which were given before the arrival of Christianity. These names are Willey, near Farnham, whose O.E. form (*to*) *Weo lēage* is a compound of *wig*, *weoh*, an idol, and *lēah*, a clearing ; and Peper Harow whose second element is from the O.E. *hearg*, a heathen temple. It is also suggested that the neighbouring Thursley and Tuesley may have been the clearings where Thunor and Tiw were worshipped. Thunderfield Castle near Reigate may also indicate the open space where Thunor was worshipped.

An ingenious interpretation of place-names formed from animal-head names, contributed by Prof. Bruce Dickins, has been included as Appendix I. His argument is founded on a passage by Bradley saying that the heads of animals were set up on poles to mark the place for public meetings : various English place-names such as Gateshead (goat's head), Swineshead, etc., may therefore indicate the site of the heathen sacrifice of a head. The thesis is intriguing, but not proven.

There are fewer camps in Surrey than in many other English counties. A few, however, are given in this volume, and the name of Crooksbury Hill near Farnham is probably derived from the British *cruc*, a hill, and the O.E. *beorg*, barrow. Hambledon comes from *hamel*, scarred, and *dūn*, hill. *Beorg* occurs also in 9 other place-names in Surrey (p. 341), and *dūn* still more often (p. 342). Anstiebury Camp (Woking) derives its name from *anstīg*, a path for one, and *burh*.

There are two names referring to clapper bridges, one under Cranleigh, and also the Clappers (Chobham), which presumably indicates a bridge across the Hale Bourne.

There are very few place-names in Surrey which have pre-Roman elements. Penge

is the only Celtic name in the strict sense, but Walton on Thames, Walworth and Wallington derive from *wealh*, the usual word for British.

Two interesting names connected with Roman times occur near Godstone. Stansted House derives from the Roman road which passes it, running from London towards East Grinstead : the adjacent Flower Farm is probably connected with O.E. *flōr*, although no tessellated pavement from a villa has yet been discovered (cf. Fawler, Oxon, whose name in 1205 was Fauflor, derived from *fāgan flōre* [spotted or dappled floor], and where a tessellated pavement was actually found in 1865).

Appendices 2 and 3 deal with the name Coldharbour and the element Friday in place-names, respectively. Coldharbour appears 307 times as a name for a farm or homestead, and occurs especially in southeastern England. It is met with 30 times in Kent, 26 in Sussex, and 18 in Surrey. The name has been traced back to the beginning of the 14th century, and it is here shown conclusively that the oldest forms dispose of the derivation from *col d'arbre*. The real meaning of the word is, however, still uncertain.

Various names are found in the south of the county which are obviously survivals of the now extinct iron industry of the Weald. Such are Abinger Hammer, Hammer Pond (Thursley), Furnace Bridge (Dunswold), Hammer Bridge (Leigh), Cinderhill Wood (Bletchingley), and Tumbling Bay (Alford), which name indicates an 'out-fall or pool into which the water fell'.

Other derivations interesting to the archaeologist as illustrating medieval customs and institutions are : Northbreache Manor (Ewhurst), which is traced to O.E. *braec*, a 'strip of (uncultivated) land taken from a forest by royal licence, for temporary cultivation' ; Woolpit (Ewhurst), *i.e.* a pit for trapping wolves ; Cotland Farm (Charlwood), a word recorded as early as *c.* 1150 and meaning 'the piece of arable land, about 5 acres, held along with his "cot" by the O.E. *cottar*' ; Rose Farm (Oxted), where the name is derived from the rent (in 1345) being fixed at the yearly payment of a rose at the feast of the Nativity of S. John the Baptist.

Various curious corruptions ('folk-etymology') occur throughout the volume : perhaps the following are worth quoting here. St. Martha's Chapel, Guildford, was early granted to Newark Priory, which was dedicated to S. Thomas the *Martyr*. The form Momartre extra Gildeford appears in 1273 for this. Galley Wood (Cranleigh) is corrupted from the 1298 form (West-)gavelwode, the first element being the O.E. *gafol* (tax). The form Hendodd's Wood (Bletchingley) of 1761 has now become Hangdog Wood. The 1548 form Chertelease (Thursley), which is derived from *ceart* (see above) and *læs* (pasture), appears today under the name of Chocolates. WILFRID BONSER.

CAMBRIDGE ANCIENT HISTORY. Vol. IV of Plates. *Prepared by* C. T. SELTMAN. *Cambridge University Press*, 1934. *pp.* 211. 12*s* 6*d*.

The quality of the blocks in this volume of illustrations to the now almost completed Cambridge History, is very much above the standard hitherto followed. Indeed, the illustrations could not be better.

The all too brief Celtic section might have been improved by the addition of Gaulish examples of the red and white painted pottery which is here only illustrated by the Bohemian fragments. This omission is the more important since there were no such instances given in vol. III.

The Parthian period is one of the obscurest of all periods in the history of art and the section of illustrations is the most useful and illuminating in any existing publication.

The Nimrud Dag reliefs show clearly one of the contributions that went to make Sasanian sculpture.

The Etrusco-Italic section is profoundly controversial and many of the textual descriptions fail to carry conviction. But the material given is adequate and admirable. The bronze head of a boy (a) on p. 43 and the ' Brutus ' on p. 47 have no qualities which are not ultimately due to Hellenistic origin. The faces, as racial types, may well be Italic, but I can see no quality other than Greek in the art. Perhaps I am obtuse. Nor do I feel convinced that one can claim the use of death-masks as the basis of stone-carving (admirably illustrated on p. 50) as an Italic peculiarity. As far back as the fourth century Lysistratus had employed life-masks, from which wax moulds were made and worked up. Italians derived the practice as much from Greek technique as from ancestral Italic custom : one cannot differentiate between life-masks and death-masks from an artistic point of view.

The reliefs illustrated on p. 61 are there described as instances of the style and technique of Italo-Etruscan origin. Movement of figures from back to front ; penetration of the background by elements of the scene, and solidity of treatment are stated to be the qualities by which Italo-Etruscan work is differentiated from Greek, according to the principles laid down by Sieveking. The ' tri-dimensional Italic principle ' is contrasted with the ' two-dimensional Greek '. Frankly I must confess that such an analysis strikes me as nonsense. Movement from back to front is found as early as the Bassae reliefs ; penetration of the background is found in the Siphnian reliefs of the sixth century and examples multiply as Greek sculpture moves on its course. The Girgenti sarcophagus, an early Hellenistic work, shows all these alleged Italic qualities combined and fully developed. Roman sculpture merely varies the method and exaggerates it. The claims of autochthonous Italic methods seem to evaporate if Greek sculpture is examined with an eye unclouded by rule-of-thumb principles alleged to be Greek.

The Roman section on sculpture and architecture nevertheless serves as a magnificent corpus for study, and the section on mosaic and painting is of the greatest value.

S. Casson.

KANSU MORTUARY URNS OF THE PAN SHAN AND MA CH'ANG GROUPS. Palaeontologia Sinica. Series D, III, fasc. 1. *By* Nils Palmgren. *Peiping*, 1934. *pp.* 204 *and* 41 *plates. Price not stated.*

It was in 1923 that the existence in China of an apparently neolithic culture characterized by painted pottery was first announced. Connexions with the early painted wares of the West were at once suspected and eagerly sought. But in those days neolithic or copper-age painted pottery was hardly recognized save in Thessaly and the Ukraine, at Anau and at Susa ; too much significance was liable to be attached to the abstract fact of vases being painted. In the intervening decade other regions have produced painted fabrics no less ancient, a bewildering variety of distinct and apparently unrelated styles has been recognized and a long persistence of painted decoration, notably in Iran, has been established. On the critical principles formulated and applied by Frankfort many of the comparisons which in 1923 seemed surprising now appear childish and irrelevant. Only the analogies between the Chinese wares and those of the Black-earth region of southeastern Europe, first noticed by Hubert Schmidt and more rigorously worked out by Menghin, still hold the field despite Frankfort's criticisms.

In the same time the position of the painted ware in Chinese prehistory has been to some extent clarified. Andersson distinguishes six neolithic or chalcolithic stages in western China. His oldest, or Ch'i chia stage, lacked painted ware. This appears first in the next stage, termed Yang shao. Other stages, considered to be later on the strength of an increasing wealth in metal, carry on the Yang shao traditions with new forms, designs and techniques. It is well, however, to remember that this cultural sequence lacks stratigraphical support; the prehistoric inhabitants of western China did not occupy the same site for many generations, but repeatedly shifted their villages in obedience to the exigencies of migratory garden culture. Mere absence of metal is not in itself proof of high antiquity, and terms like ' neolithic ' must not be invested with the absolute value of geological periods. Andersson himself has noted on one vessel of his earliest, or Ch'i chia stage, painting recalling that of his latest or Sha ching group !

The present volume studiously avoids such controversial questions, but it presents for the first time material in the light of which the presumed western connexions can profitably be discussed. Dr Palmgren has contented himself with illustrating and describing some seventy vessels of the Yang shao style and a like number of the rather later Ma ch'ang group. The majority of the vessels come from cemeteries that had been plundered by local peasants so that closed tomb-groups cannot be expected. Such typological developments as the author traces, therefore, depend on an analysis of forms or motives in isolation and are unsupported by parallel series. Prolonged and intimate contact with this large collection has revealed to Palmgren many secrets of the prehistoric potter's craft. His acute observations show that the pots were built up by rings and that they were fired in kilns in which the vessels might be stacked three deep. Inferences as to the relative ages of the several features may be accepted with more reserve. The Yang shao pots are grouped into 40 forms, their ornamentation into 20 ' décor families '. Twenty shapes and 16 ' décor families ' suffice for the description of the Ma ch'ang group. In the older series the large urns with long or short necks account for 70 per cent. of the vessels described, and spiral patterns or their derivatives predominate in the ornamentation.

The description is completed by 8 superb coloured plates, 33 plates of half-tones and 228 line blocks. From these the reader will gain a fair idea of the magnificent ceramic art of China in a Stone Age; it is ruled by a self-conscious style, not less firm and mature than those of the Indus valley, Minoan Crete or Iran and Syria (where the latter regions achieved a style at all). Its products are genuine things of beauty; the late Roger Fry remarked to the reviewer that the Kansu pottery exhibited the most truly artistic system of ornament achieved by any prehistoric potter.

It is in the light of this style, taking form, composition and motives at once into account, that the supposed relations of Chinese culture to western ones must be judged. The contrast to the art of the Indus valley, Susa I and Arpachiya (Tell Halaf) is evident. With the Ukraine the case is different. The general effect of the big Yang shao urns is really reminiscent of the later Tripolye vases as represented in Cucuteni II or Schipenitz. The Chinese style is indeed more sophisticated than the European; it is not easy to define to what precise phase in the development of the Black-earth designs it should be compared—neither the chaotically arranged spirals of Cucuteni I nor the (? degenerate) by-products represented at Koszylowce come into the picture. But Menghin's bold hypothesis remains attractive: here in western China we would find descendants of the once flourishing culture that vanished so mysteriously from the Black-earth belt of Europe ! Still how should cultivators in whose farm-yards pigs were evidently important

move with their ceramic art from Europe to Chinese Turkestan without a single intermediate station east of the Dnieper? Migratory garden-culture will not explain a discontinuous spread of this magnitude. V. G. CHILDE.

SHIRAGI KO GA NO KEN-KYÛ : Study on the Ancient Tiles of the Silla Dynasty, Korea, with a Corpus of these Tiles. *By* K. HAMADA *and* S. UMEHARA. Report upon Archaeological Research in the Dept. of Literature XIII. *Kyoto Imperial University*, 1934. Japanese Text about 80 *pp. with* 43 *illustrations*, English Summary 20 *pp. and* 78 *plates.*

A school of architecture may select a special feature for extra decoration. Chinese architects and their pupils in Korea and Japan selected the edges of tiles overhanging the eaves as a surface for ornament. Chinese tiling is essentially like Greek or Roman made up of the flattish *tegula* and the *imbrex* of semicircular section inverted over the joint of the *tegulae*. At the eaves the lowest *imbrex* ends in a sort of antefix, but it is a complete disk or oval overlapping the edge of the roof, and the lowest *tegula* shows its edge as a crescent or rather segment of a circle. The disks are common enough in museums but have generally lost the semi-cylindrical tile behind them. To complete the roof there must be the great ridge-tiles and special tiles at the corners of the eaves. All these afforded scope for ornament. T'ang art was imitated in the kingdom of Silla (Chinese Hsin-la; Jap. Shiragi) in southeast Korea with its capital of Kyöng-chiu (Ch'ing-chou, Jap. Kei-shû) during its flourishing period from about A.D. 660 to 779. The Silla craftsmen covered all the surfaces along the eaves that could be seen from below with delicate ornament, the disks with lotus rosettes, the crescents and edgings with running sprays going back to West Asiatic and even Greek models. They introduced animals, birds and monsters into the foliage and put monstrous heads upon the disks, upon which the Chinese were fond of putting mere ideograms. The examples of Silla work are classified upon an elaborate system, but the authors point out that the craftsmen were impractical inasmuch as their patterns were too much detailed for their high setting, while the Chinese and Japanese work, being bolder, shows more effectively from the ground. Paving-tiles and building-bricks with similar patterns are also reproduced. The book is dedicated to the memory of Dr A. H. Sayce, whose portrait adorns it.

It may be mentioned that Messrs. Nishida and Umehara published last year in the ' Report of Investigations into the History of Kyoto City ', vol. XV, an account of a kiln for producing such tiles discovered on the site of the ancient palace Kurusu-no-kama at Kyoto belonging to the Heian period early in the 9th century. ELLIS H. MINNS.

ANCIENT TEXTILES FROM EGYPT IN THE UNIVERSITY OF MICHIGAN COLLECTION. *By* LILIAN M. WILSON. *Ann Arbor : University of Michigan Press*, 1933. *With* 23 *plates and* 2 *text figures.*

This book describes two collections of textiles, one from the excavations directed by Mr Starkey at Karanis (Kom Aushim) in 1924–26, and the other purchased from a dealer.

The first collection is the more important because the fragments in it, which were found in the rubbish of small houses, can be dated, from the coins and papyri found with them, from the end of the 3rd century to A.D. 460. At the close of the expedition they were sent to Mr Thomas Midgley, who cleaned and classified them.

A selection from both collections is here figured in excellent collotype plates, and full descriptions are given by the author, Miss Wilson, as well as chapters discussing the different weaves and the loom which may have been used to produce them. Among the mass of fragments from Karanis (3450 in all), mainly in plain and tapestry weave, a few pieces are classed as 'twills' and 'draw loom' weaves, and Miss Wilson claims that these 'establish a *terminus ante quem* for the introduction of the horizontal loom'.

The twills alone could not prove this, for they can be woven on more primitive looms, *e.g.* the twills of the Navahos and other Indians. The weaves nos. 16, 17 (pl. 3), however, are in a class of all over repeating pattern that well supports Miss Wilson's contention, but it seems unnecessary to call them 'draw loom' weaves, as they appear, as do also some pieces kindly shown me by Mr Midgley, to be capable of production on heddles alone, without a second shedding device.* While the fragments are too small to prove this, they do make it probable that the horizontal treadle loom dates back to the 4th century A.D.

There are some defects in the book: the chapter on Ancient Looms shows misconceptions of which the discussion cannot be embarked on here, and there are no diagrams to assist descriptions of the special weaves. But the value of the work is evident.

Students of primitive weaving are much indebted to those who have contributed to the volume, to Mr Starkey for preserving the material, and to the University of Michigan for breaking new ground in its publication.

G. M. CROWFOOT.

CARAVANS OF THE OLD SAHARA: An Introduction to the History of the Western Sudan. *By* E. W. BOVILL. Published for the International Institute of African Languages and Cultures. *Oxford University Press*, 1933. *pp.* 300 *and* 13 *maps.* 21*s.*

Mr Bovill's work is extremely difficult to review and would take considerably more space than is available for the comment and criticism which it really deserves. It is the first attempt yet made to present in a lucid and coherent form a historical picture of Equatoria from the Atlantic to the Nile Valley during two millennia of movement and change. Mr Bovill has succeeded in writing the first standard work on this great subject. It suffers inevitably from the defect of its virtues, since within the compass of one volume there is no room for the discussion of data and evidence where these are conflicting and obscure. The subject, moreover, is so little known to the general public that the Author is unable to assume knowledge which in better known areas and historical periods are the common property of any educated reader, and consequently he is obliged to start with first principles. As such, the earlier chapters deal with Roman Africa and the 'Races of Man'. They are inadequate, while the detail available for the last part on the opening up of Equatoria is disproportionate to the amount of evidence available for the main portion of the book, which deals with the enthralling history of the Niger empires.

These defects inherent in the plan are probably unavoidable in any attempt at a survey which commences in prehistoric times and ends with the beginning of this century. It would perhaps have been preferable if the volume had been confined to

* Worst, *Foot Power Loom Weaving*. See 'Monk's Belt', a 4 heddle weave, p. 46, and damasks on 10–12 heddles, pp. 153, 155.

the history of the great African empires which extended in succession of time and place from the Upper Niger to the Upper Nile with all the influences to which they subjected, and to which they were subjected by, the desert people of the Sahara. It is to be hoped that the first and the last sections may one day be incorporated into separate volumes.

To anyone who has followed the history of the people and areas concerned there are a thousand matters of detail and not a few of import where the reviewer, and other students of the subject, will differ from Mr Bovill's interpretation of authorities, but in no case will the reader be left with the impression that he has ignored available data or strained uncomfortable evidence. On the contrary, the reader will remain profoundly impressed with the erudition and honest scholarship that this work displays.

The attractive story of the Moorish invasion and conquest of the Middle Niger—one of the most surprising feats in history inasmuch as an army was marched across the western Sahara—is dealt with too briefly to do more than whet one's appetite. Again, the political and territorial organization of the Songhai government of Gao on the Niger—an example of a most enlightened solution of the difficulty of administering different racial unities occupying the same area—is a subject which, properly expanded, might serve as a very interesting object lesson to modern statesmen. There is, perhaps, slightly too much space, comparatively to the other subjects, devoted to the disputes of the autonomous rulers of Timbuctoo. The influence of the desert confederations (or the lack of it from time to time) on administrative policy and dynastic succession in the kingdoms of Negroland is more worthy of study in a concise survey of this kind than anecdotal accounts of isolated early European contacts.

There are other problems to which only further research can provide a solution. Of these the greatest and most fascinating are those presented by the Gara and the Fulani peoples. Ethnologically and anthropometrically, little, it would seem, can be done to elucidate them : the racial cocktail has been too well shaken. There is hope, nevertheless, that diligent collection of oral history and legend and the study of sociological and psychological anthropology in the Niger territories may reveal further data from which some picture of their racial origins and history can be drawn before they are all forgotten. While the gold rush of the last year or two may help in locating the mother reef from which the alluvial deposits of Wangara draw their gold dust, yet another fascinating problem is that of the whereabouts of the copper mines of Tekadda somewhere in the steppe desert between Agades and Sokoto.

These are only some of the exciting and controversial subjects touched by the Author. The great merit of his work is that he has provided a frame into which the missing pieces of the jigsaw puzzle may be fitted as they come to light and their proper places are recognized.

The detail-maps which appear frequently in the text are admirable, but are by no means adequate substitutes for a really good map of the whole territory covered which should be provided at the end of the volume and so mounted that it may be consulted while reading the text. But this is the publisher's fault doubtless and not Mr Bovill's, who also cannot have had any hand in choosing the deplorable and rather misleading title, which is calculated to prejudice so scholarly a book. The reviewer's task has been particularly invidious and hard. He feels he cannot do justice to such a book and, furthermore, suffers from the coals of fire attendant upon seeing his own researches quoted in extenso and in some matters with misleading consequences, having come to realize as he has that Mr Bovill has accepted in good faith certain conclusions which unfortunately the reviewer now suspects are incorrect. FRANCIS RODD.

ARCHAEOLOGIA ORIENTALIS, published by the Far Eastern Archaeological Society in Tokyo and Kyoto.

Folio series (see Antiquity, March 1935, p. 121).

IV. Ying-ch'êng-tzŭ: the Han Brick Tomb with Fresco-painting, etc., near Chien-mu-ch'êng-i, S. Manchuria. *By* Osamu Mori and Hiroshi Naito with an English Résumé by Kosaku Hamada. 8 *pp.* in English, 36 §§ in Japanese *and two Appendices*, 45 *plates* (11 *coloured*), 38 *figures*. 1934.

This is a description of two tombs on the road between Port Arthur and Dairen. No. 1 was discovered by chance in making the road: it consisted of three vaulted chambers in brick; an arch between the main room and one of the side rooms is horse-shoe shaped, which is a novelty. It contained practically nothing but pottery, everything else had been plundered. The date was obviously Han.

The other tomb, no. 2, was more interesting. Its plan is original, a central chamber and three side-chambers; within the central chamber an inner chamber or tabernacle of brick contained the main burial: an inner chamber of wood occurs in Siberia. A model of the whole has been set up in the museum at Port Arthur. The inner faces of the main walls were in patterned brick coloured red, white and dark brown: this work is the best of its kind yet found and is well reproduced in the frontispiece. But the great feature of the tomb is wall-painting, described as fresco, in black and red pigment. The principal scene seems to show people greeting the dead man and offering him food and drink. The other subjects are life-size warriors and beasts guarding the doors of the chamber inside and out. They are very rude but rather spirited and practically no Han painting on such a scale is known: in character it is just the opposite to the contemporary work on the lacquer basket described in Antiquity, June 1935 (p. 251). Among the grave-goods, again mostly pottery, the best were a five-socketed candlestick and a model house. The publication is as perfect as the former issues of the Society. The English summary is rather jejune.

Series B (small quarto).

I. Inner Mongolia and the Region of the Great Wall. *By* Namio Egami *and* Seiichi Mizuno, 16 *pp.* in English, Japanese text in three parts: I. Microlithic culture in Mongolia, 62 §§, 15 *plates and* 27 *figures;* II. Sui-yüan Bronzes, 204 §§, 48 *pl.*, 116 *figures*; III. Cord-ware sites along the North Frontier of China, 40 §§, 66 *pl.*, 31 *figures and map*. 1935.

I. The microlithic culture of the sand country in Mongolia and Manchuria is known from the work of Licert, Granger and Nelson, and Titov and Tolmachëv. It had not been observed on the R. Silingol (116° W, 44° N). It appears to be the culture of quasi-nomads contemporary with the Chinese neolithic husbandmen and lasted through the 2nd millennium B.C. to be superseded by the Ordos bronze culture. Associated with the microliths are perforated stones, probably hammers. An interesting map (fig. 27) shows the regions of neolithic and microlithic and their overlap along a belt stretching from Kansu to Vladivostok.

II. The Sui-yüan Bronzes (for which Professor Andersson has decided to use the name Ordos) have received much attention lately. The best collection ever made was shown at the Stockholm congress two years ago. Andersson published an immense number in the *Bull. of Far Eastern Antiq.* vol. IV and Dr Arne two well-observed finds in vol. V. Then Dr Salmony astonished us all by his book, *Sino-Siberian Art*, on the

Loo collection, in which he wished to bring the dates down from say 300 B.C. to A.D. 1100, but did not convince us.

Our Japanese authors begin with a well-illustrated account of the whole subject; most of the text-figures are drawn from European publications. They are inclined to see the origin of both style and types in the far west—in the table, § 200, they make the culture begin about 800 B.C., flourish 500 to 100 B.C. and survive more or less till A.D. 200. Their judgment is mainly based on Teploúkhov's survey of styles in Minusinsk. They agree with the common view which assigns the things to the Hiung-nu or Huns.

The plates mainly illustrate the collection made by the authors and now divided between Tokyo and Kyoto, though a few objects in other museums or in private possession are reproduced. It contains little but axes, daggers, knives and cauldrons and is rather poor in the more decorated pieces such as the belt-plaques which show the style at its most elaborate. A type that I have not noticed before is that of mace-heads with angular projections. The objects were unfortunately not excavated by the authors, but mostly bought at Sui-yüan or Peiping. What we most need is precise information as to how these things are found.

Three plates are devoted to more or less schematic drawings of (I) the socketed axes and chisels, (II) daggers and (III) knives, classified under types, and a useful attempt is made to indicate which types come from the steppe region and which from the basin of the Huang-ho. This section of the book is helpful as making known some new material, but does not seem to add very much to our knowledge, though no doubt very valuable for Japanese readers.

III. A description of dwelling sites with corded ware and polished celts all along the railway from Peiping by Sui-yüan to P'ao-t'ou. The people were the humble Chinese, for the most part contemporary with the bronze age, but perhaps not using metal themselves and so sub-neolithic, lasting down into Han times, apparently living among the nomads and encroaching upon their pastures, just as they were doing the other day. This stage was followed by one in which the nomads after Han times got the better of the Chinese. So the alternation goes on.

This Series B promises to be very useful. ELLIS H. MINNS.

A CONTRIBUTION TO THE ARCHAEOLOGY OF NORTHEAST GREENLAND. *By* SØREN RICHTER (*Skrifter om Svalbard og Ishavs-undersøkelser*, no. 63). *Oslo* (*Det kong. Departement for Handel, Sjøfart, Industri, Håndverk og Fiskeri*), 1934. *pp.* 149. 25 *kr.*

It is refreshing to find a government Department for Trade, Marine, Industry and Fisheries publishing an archaeological monograph. That is what the Norwegian Department in question has done. And very courteously the valuable monograph is written not in Norwegian but in English. In 1929-30 and 1932-3 Mr Richter accompanied hunting expeditions to northeast Greenland especially to study archaeological remains. During these journeys he was given the opportunity of excavating deserted Eskimo dwelling places. In this official publication he gives an admirable account of his results. Two sorts of structure were encountered at the old settlement sites. The winter-houses are excavated in the earth but walled with stones and roofed with driftwood. In plan they recall the familiar snow-houses of the Arctic Eskimo, but also dwellings erected both for the living and for the dead in Scotland as well as the chamber

tombs of other parts of Atlantic Europe. But such subterranean dwellings were habitable only in winter: every spring the thaw would convert them into 'marshy burrows'. Then their builders removed into tents, pitched in the vicinity: their sites are marked today by rings of stones reminiscent of our hut-circles (in Scotland the juxtaposition of *souterrains* and hut-circles has often been noted).

The winter-houses yielded many hunting implements of bone, knives and vessels of bone, stone and wood and curious ornaments. These are well illustrated and are interesting for their similarity to prehistoric European artifacts: the 'snow knives' of fig. 56 for instance are curiously like 'neolithic' knives from Scandinavia. Besides describing and illustrating the ancient dwellings and their contents the author lucidly discusses their geographical situation, and demonstrates how 'the winter homes of the Eskimo were not chosen casually but with a detailed knowledge of the country and of the facilities the site offered for getting through the dark months in the best possible manner'.

V. G. CHILDE.

NOTES ON THE HISTORY OF ANCIENT ROADS AND THEIR CONSTRUCTION. *By* R. J. FORBES. *Amsterdam: Allard Pierson Stichting*, 1934. *pp.* 182 *and* 35 *text-figures. Price not stated.*

We welcome this scholarly and fully documented essay on the subject of ancient roads and road-building, which is published by the Archaeological Department of the University of Amsterdam with financial support from Sir Henri Deterding of the Royal Dutch Petroleum Company.

There is no aspect of road-building in ancient times which is not discussed in detail by the author—Malta and Crete, Egypt and Palestine, Asia, India, Greece, and Italy are all considered in his wide survey. There are further chapters on the prehistoric roads of Europe, and the geographical considerations of road-building, various chronological tables, and finally a most extensive bibliography of ancient and modern sources.

It is absolutely essential that any road-book should be furnished with clear, well drawn maps, and here Mr Forbes has departed from the high standard of his text in publishing such altogether inadequate maps as fig. 3, 'The Trackways of Engeland', fig. 2, 'Traderoutes in Prehistoric Europe' and fig. 21, 'Roads of Roman Britain'. Not a single map in the book possesses a scale, and only one is provided with a north mark.

Especially to be commended is the chapter dealing with the prehistoric log-roads of Europe. Mr Forbes quite rightly reminds us that the wide variations in constructional detail should be clear enough evidence that they cannot all date from one and the same period. In Holland, for instance, many of them occur under the 'boundary layer' of the peat moor and are thus early Bronze Age in date, while further east in Prussia log-roads were still being used in Hallstatt—La Tène times, and in the wooded and swampy country beyond the Rhine they were frequently used by the Romans in their constant activities for the defence of the frontier against the German tribes. Altogether, there can be no doubt that simple corduroy roads were among the earliest experiments in road-making, and that their outstanding advantages of simplicity, cheapness, and ease of construction have been appreciated over a long period, and even down to the present day.

It is curious at first sight that the marked technical ability of the Greeks made no contribution to road-building. The answer to the paradox, as Mr Forbes shows, is that

the social and geographical structure of Greece actually hindered road-building, for the political horizon never reached beyond the city and its valley. At any rate, Greek travellers were accustomed to some sort of comfort in the inns along the roads, for we are told that ' roads without inns are no better than life without holidays '.

There are several small matters which will need revision in a future edition. The Pilgrim's Way was not immortalized by Chaucer (p. 27), *Radial Times* (p. 168) should surely read *Radio Times*. One misses Collingwood's *Roman Britain* from the bibliography of Roman roads ; and there are various trifling matters of spelling, grammar, and idiom which are tiresome to an English reader. For all this, it is a book which no future writer can afford to ignore. R. F. JESSUP.

SYMBOLS FOR DESIGNERS : a handbook on the application of Symbols and Symbolism to Design. *By* ARNOLD WHITTICK. *Lockwood*, 1935. *pp.* XVI, 168, 15 *plates and text-figures.* 12*s* 6*d.*

Mr Whittick is not a little concerned to distinguish between conscious and unconscious symbolism in order to explain to his reader that he intends to discuss that variety of symbolism which is used consciously and deliberately. Symbolism, unconscious in its beginnings, must satisfy an instinctive susceptibility ; it is, in the author's own words ' an expression of man's adaptation to his environment ', and this is the underlying proposition of Mr Whittick's clever introductory thesis which occupies the first part of the book.

The main part of the book is an attractive and well carried out dictionary of symbols, their history, meaning, and suitability for use in modern design. It is, of course, for designers and craftsmen that the book is chiefly intended, though the curiously-minded general reader will find a good deal to interest him. Many excellent illustrations are provided, but it is a pity they could not have been extended to cover every symbol which is considered.

This book appeared during a recent exhibition at Burlington House ; after one had contemplated that somewhat distressing and fulsome liaison between art and industry, it was refreshing to open Mr Whittick's book and to see that commercial artists can still create a refined and beautiful symbolism in such works as the Mond Anniversary Medal and the Spaeth memorial at St. Louis. R. F. JESSUP.

EUROPEAN CIVILIZATION: its Origin and Development. *By* Various contributors. Under the direction of Edward Eyre. Vol. I : Prehistoric Man and Earliest Known Societies. *Oxford University Press*, 1934. *pp.* X, 1322. 25*s.*

' The real injury to an appreciation of what the past has been comes from . . . the assumption of the inevitability of what in fact took place, and the habit of judging past events according to the way they seem to have hastened the coming of the modern world of sovereign, territorial, democratic states. The unity of Europe has been less vividly apprehended than the divergences of its parts '. The imposing series of volumes which we are now promised is intended to restore the balance. Their purpose is to tell the story of unity rather than of separation ; to insist upon the living, common elements in European civilization, and to show how they originated and grew. The enterprise is formidable, as formidable as the task of criticism when each of the huge volumes appears.

How is this first instalment of 1322 pages conceived ? It is, I think, a pity that the editor did not attempt to give, in his brief introduction, a coherent summary of the

scheme that was in his mind. What he has in fact done is to get his contributors to describe the rise of two parallel traditions. On the one hand they have traced the emergence, from primitive civilization, of a culture that was to spread the notion of the universe 'as reasonable and as manageable by human reason', alterable by human interference; to show that the circumstances and processes of nature 'are not only in themselves orderly, but that this orderliness is intelligible to man'. This we might accordingly term the tradition of the reasonable universe. Along with it, but apart from it, developing in and through the peculiar history of a people that became a fiercely self-conscious nation, is the tradition of holiness, the religious tradition proper, in the sense that religion does not imply merely the service and worship of the deity, but undefilement and moral excellence on the part of the worshipper. The first of these traditions culminates, after the rise and fall of preliminary and preparatory older cultures, in the achievements of the Greeks; the second is realized—we cannot speak of fulfilment yet—in the history of Israel. Presently, in the Roman world, there will be interpenetration: in the writer of the Fourth Gospel, in St. Paul and in the early Fathers, the two traditions will be seen in varying measures combined, *ratio and iustitia*, the Greek (in its Hellenistic-Roman setting) with the Hebrew (in its redemptive-Messianic). The union is the work of Christianity in the Mediterranean world.

This is unduly to simplify, perhaps unfairly to anticipate. After all, there is a more material reading of the book: for if it tells the story of how people settled down to civilized life round the great distributing medium of the Mediterranean, that is enough: and this task has certainly been performed. But the reader needs more help than he has been given. When he leaves the chapters in which Professors Myres outlines the growth and distribution of the Indo-European-speaking peoples (chapters which, to one who has long known him, seem to sum up and unify years of research), he may feel a trifle lost in the lengthy section on 'the East' by M. Jean, and wonder what is its relation to the very full analysis of the Old Testament written in the true spirit of orthodoxy by Dr Michael Gruenthaner;* or how the story of Ancient Egypt, told so clearly by the late Professor Peet, is related to either. A good table of comparative dates would have been very valuable; or maps showing more than areas of speech or culture (features both well represented here), in fact actual reconstructions of invasions and migrations. If however the guiding lines suggested above are a fair and trustworthy interpretation of the book, then I feel that unquestionably the vital sections are these: first, the pages in which Professor Myres, seated aloft, as it were, in a great aeroplane driven by the three engines of archaeology, geography and linguistics, flies over the original homes of the Indo-European groups, and selecting the most interesting and significant section of them, the 'battle-axe folk', shows how they spread from the South Russian Steppe to the Baltic and Central Germany on the one hand, and to the Balkans and Asia Minor on the other, moving out of their 'grassland cradle' mainly owing to the climatic changes that took place after 2500 B.C.; and how too it was largely conditions of climate, the rain-crisis of 1400 B.C., that determined the exodus of Greek-speaking people from the highlands west of the Aegean to the coast-plains. Secondly, pervading M. Jean's narrative of early Assyria, Egypt and Canaan, the emphasis laid upon early religion as a *social and political* force, especially as illustrated in contemporary poems and prophecy. And thirdly, Mr Gomme's account of the spread of Hellenism, which is

* We are informed that this chapter has now been withdrawn and the volume reissued without it.—EDITOR.

ampler and better than his too summary chapter on art, letters and philosophy. We could have spared many of the pages on Israel and Judah (for M. Jean has thoroughly explained the significance of the Hebrew prophets) for more discussion of self-conscious humanity, of the notion of personality, the concept of taste, flowering in the Greek world. At the beginning Dr Schmidt vindicated the humanity of primitive man: would it not have been well to devote more space to man fully grown ? E. F. JACOB.

Books Received

ROMAN MINES IN EUROPE, *by* Oliver Davies. *Clarendon Press*, 1935. *pp.* XII, 294, *and* 49 *text-figures*, 6 *maps*. 30*s*.

SENNACHERIB'S AQUEDUCT AT JERWAN, *by* Thorkild Jacobsen *and* Seton Lloyd. University of Chicago Oriental Institute Publications, vol. XXIV. *University of Chicago Press*, 1935. *pp.* XII, 52, 12 *text-figures*, 37 *plates*. 22*s* 6*d*.

EARLY WELSH GNOMIC POEMS, *by* Kenneth Jackson. *Cardiff : University of Wales Press Board*, 1935. *pp.* X, 70. 3*s* 6*d*.

LLAWLYFR HEN WYDDELEG, *gan* G. MELVILLE RICHARDS. *Cardiff : University of Wales Press Board*. *pp.* VIII, 136. 6*s*.

IN THE SEALED CAVE, *by* Louis Herrman. *Williams and Norgate*, 1935. *pp.* 227, 5 *plates*. 6*s*.

HOMMAGE A HORACE A L'OCCASION DU BIMILLÉNAIRE DE SA NAISSANCE. Les Études Classiques, vol. 4, January 1935. *Namur : rue de Bruxelles*, 59. *pp.* 208.

THE UNIVERSITY LIBRARY, UNIVERSITY OF LONDON. Catalogue of books on Archaeology and Art and cognate works belonging to the Preedy Memorial Library and other Collections in the University Library. Section I : Archaeology and Ancient Art. *London : published by the University of London*, 1935. *pp.* XVI, 227.

RELIGION IN VIRGIL, *by* Cyril Bailey. *Clarendon Press*, 1935. *pp.* VIII, 338. 15*s*.

THE DORSET LANDSCAPE, *by* Geoffrey Clark *and* W. Harding Thompson. A. *and* C. Black, 1935. *pp.* XII, 116, 16 *plates*, 4 *maps and diagrams*. 5*s*.

DREAMS IN OLD NORSE LITERATURE AND THEIR AFFINITIES IN FOLKLORE, *by* G. D. Kelchner. *Cambridge University Press*, 1935. *pp.* X, 154. 10*s* 6*d*.

CIVILISATION AND THE GROWTH OF LAW, *by* William A. Robson. *Macmillan*, 1935. *pp.* XVI, 354, 12*s* 6*d*.

L'APOCALYPSE ET LES CULTES DE DOMITIEN ET DE CYBELE, *par* P. Touilleux. *Paris : Geuthner*, 1935. *pp.* 192. 30 *francs*.

CORBEL-HEAD FOUND ON THE SITE OF BURY ST. EDMUND'S ABBEY (*See* p. 388)

facing p. 385